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AMERICAN OSTEOPATHIC ASSOCIATION

ANESTHESIOLOGY NUMBER

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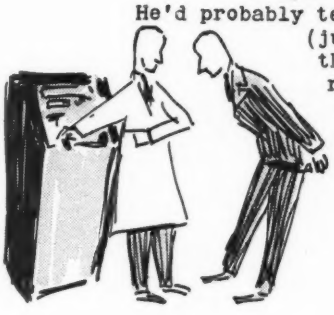

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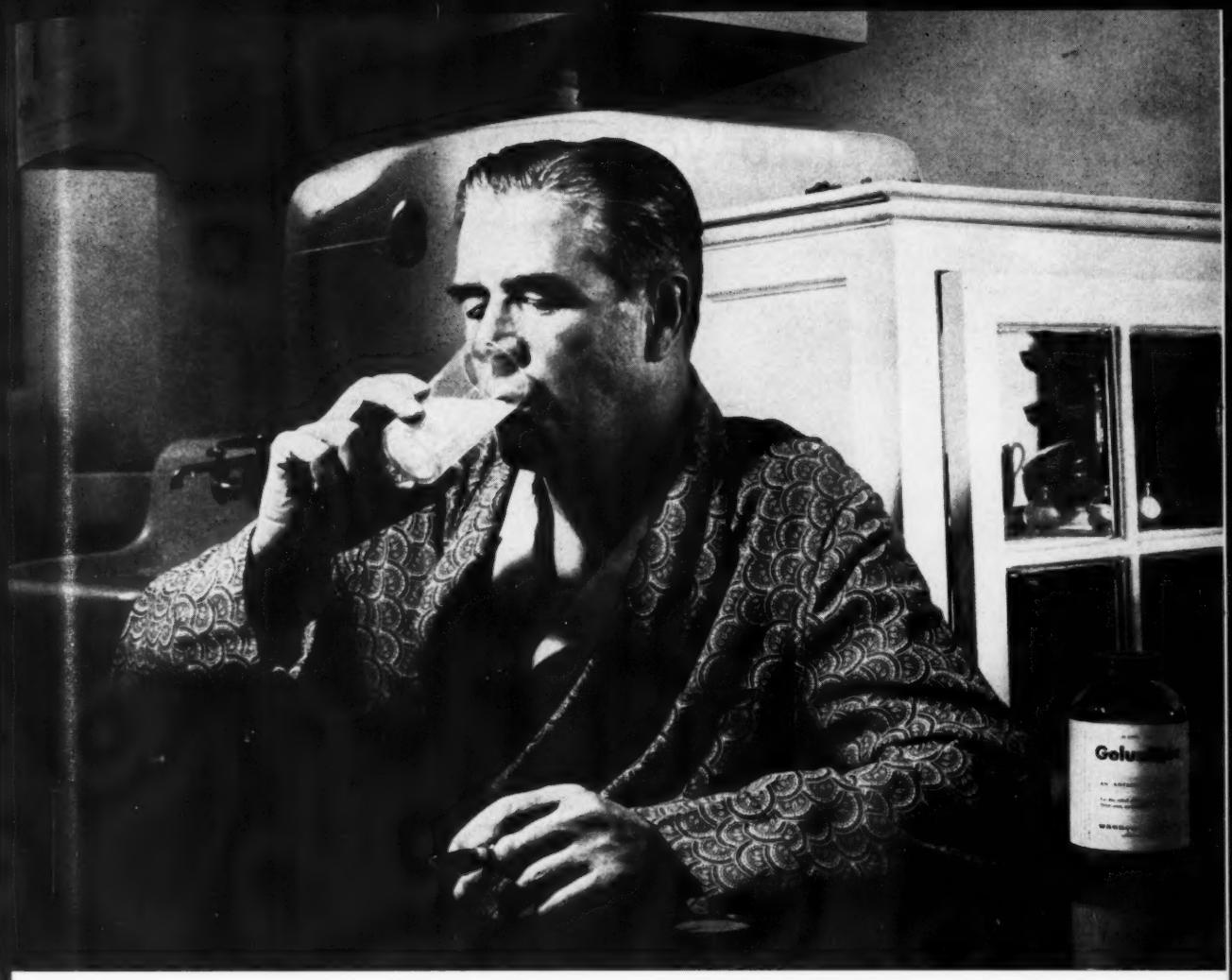

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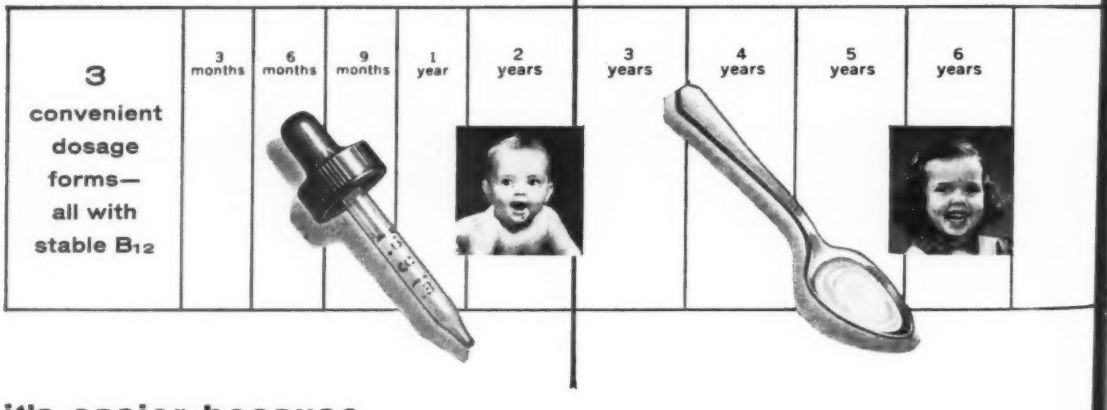

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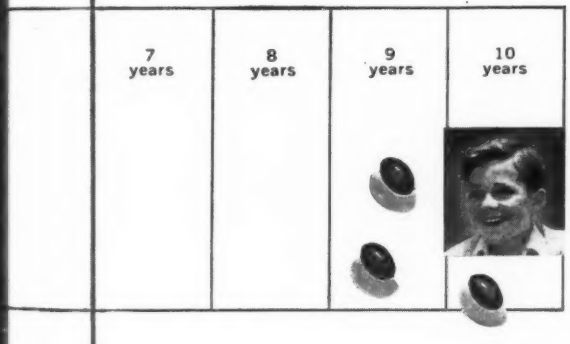

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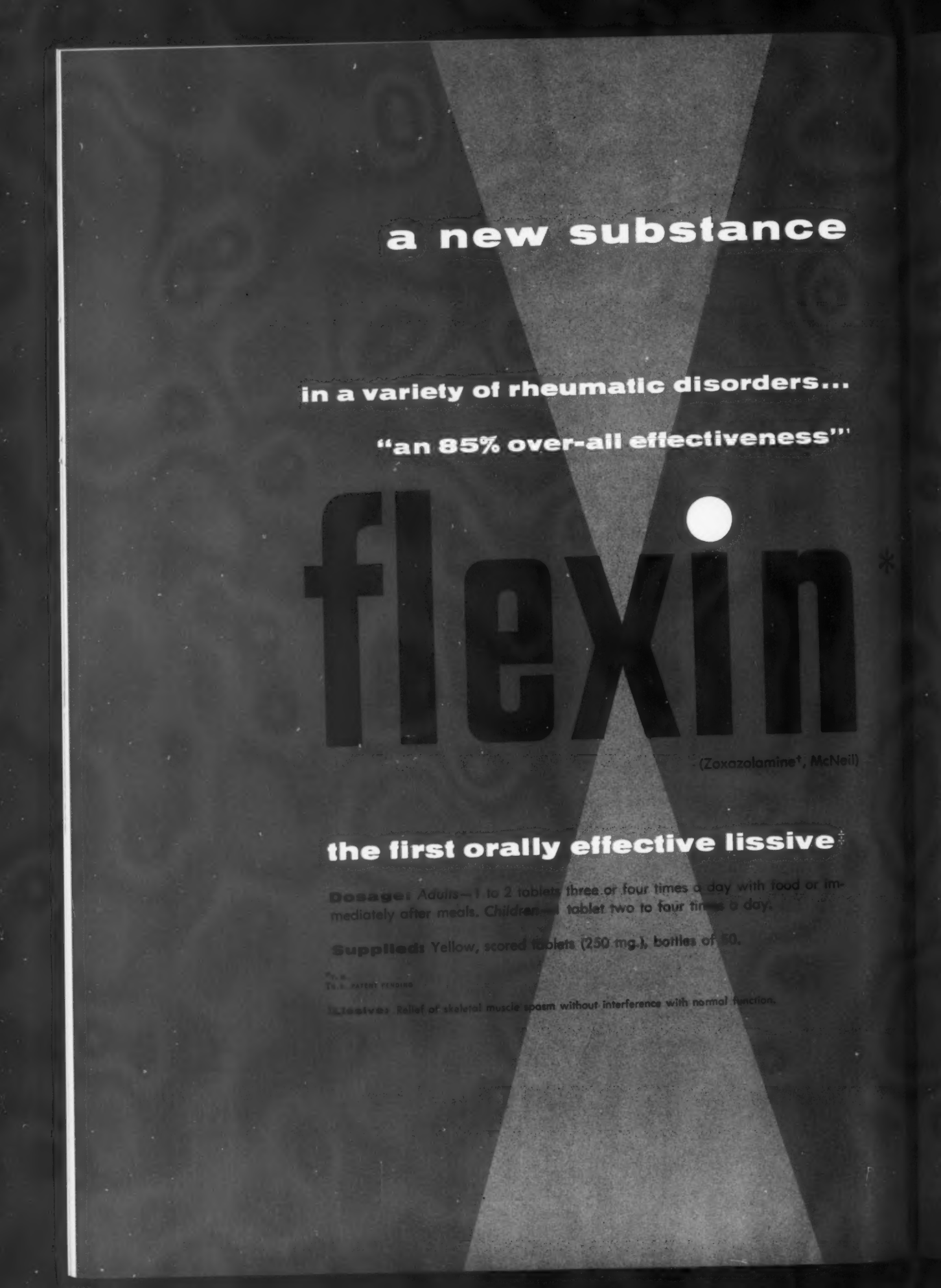
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2. Kelly, H. T.: Impact of Modern Nutrition on Twentieth Century Morbidity, Pennsylvania M. J. 58: 481 (May) 1955.
3. Cantarow, A., and Trumper, M.: Clinical Biochemistry, ed. 5, Philadelphia, W. B. Saunders Company, 1955, pp. 139, 140.

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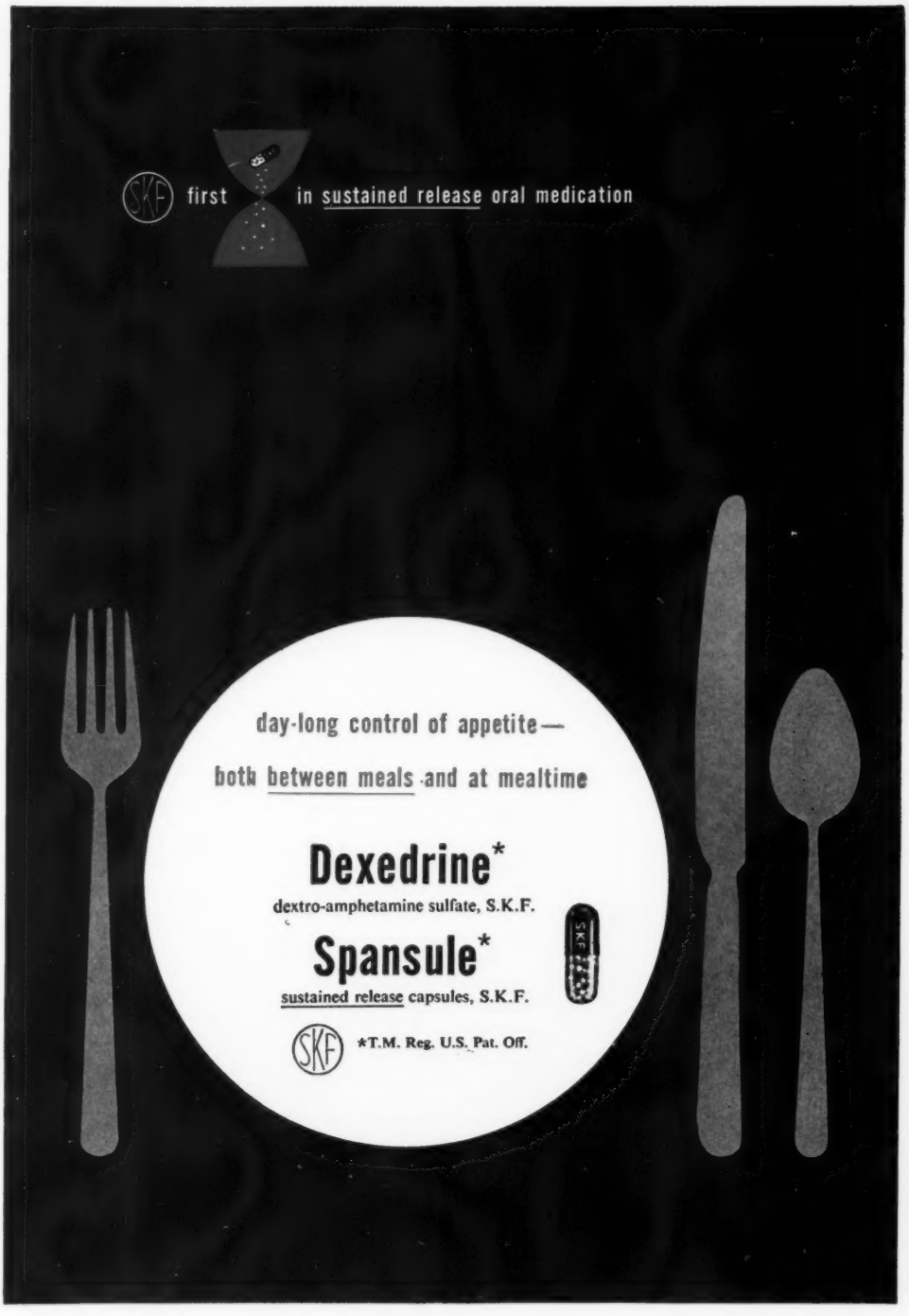
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In this major revision, fully fifty per cent of the text matter is new, rewritten, or materially changed. Many new illustrations have been added, including 13 in color. A larger and more legible type has been used. Superfluous and outdated material has been deleted.

The subjects completely rewritten or heavily revised include:

Obstetric shock
Fibrinogenopenia
Treatment of abruptio
Management of habitual abortion
Post maturity
Hypotensive drugs
The time factor in labor
Prognosis of labor
Anemia
Hydatidiform mole
Premature spontaneous rupture of the membranes
Indirect placentography
Adrenocortical hormones
Placental microscopy
Water metabolism
Uterine blood flow
Retrolental fibroplasia
Chorioadenoma destruens and choriocarcinoma

Dr. Louis M. Hellman revised the sections on anesthesia and analgesia, uterine inertia, rupture of cesarean section scar and placental morphology, contributed much data from his own clinic, shared many tedious editorial chores and rendered other assistance in the over-all revision.

Dr. Georgeanna Seegar Jones has rewritten the several sections on endocrinology, Dr. Roy G. Holly, the sections on iron metabolism and anemia, and Dr. Alan F. Guttmacher the chapter on multiple pregnancy. New material on Rh incompatibility is supplied by Dr. Milton Sacks, the embryology chapters have been revised by Dr. George W. Bartelmez, and Dr. Leon C. Chesley has critically reviewed the long chapter on toxemias of pregnancy to include modern developments.

The important new chapter on Psychiatric Aspects of Pregnancy and Childbearing by Dr. Leo Kanner, a psychiatrist of vast experience, is a model of lucid, sensible and readable coverage.

There is probably no other American text on obstetrics that so fully satisfies all types of readers, whether specialists, family physicians with obstetric practice, physicians preparing for their obstetrical "boards", teachers or undergraduate students.

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...and some have allergy
thrust upon them

Mounting evidence indicates that—unwittingly—a variety of allergic disturbances may be thrust on many infants through routine feeding of cow's milk formulas... especially when there is a family history of major allergy.

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LIQUID OR POWDERED

pioneer hypoallergenic replacement for cow's milk

rapidly relieves symptoms of cow's milk allergy

prevents cow's milk allergy (and often future major allergy) when fed immediately and exclusively from birth

sustains normal growth and development

Most of what is known today about cow's milk allergy has been learned through more than 20 years of successful clinical experience with MULL-SOY.[1-32]

Symptoms

Eczema and colic after a variety of cow's milk formulas

One week of proper diet management, using MULL-SOY, cleared both conditions

This case is from the private pediatric practice of Irvin H. Moore, M.D., Minneapolis, Minn.[22]

Whenever you encounter one or more of these symptoms in infants the cause may be cow's milk allergy[5]*. . .*

eczema	anorexia
colic	sneezing
pylorospasm	"unhappy all the time"
diarrhea	urticaria
nose cold	allergic toxemia
croup	constipation
chest cold	asthma

Mull-Soy for treatment:

Eliminate cow's milk and replace with MULL-SOY.

"A twenty-four to forty-eight hour trial substitution feeding . . . will quickly determine whether or not milk is the guilty factor."[14]

"Use of soybean milk [MULL-SOY] as cow's milk replacement successfully managed 80 per cent of cow's milk allergies."[22]

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"To give a potentially allergic newborn infant a trial feeding of cow's milk ignores the basic premise of this procedure, namely, that these children have an immunologic immaturity in the first few months of life . . ."[27]

how to use Mull-Soy

MULL-SOY LIQUID — start with 1:3 dilution with water, strengthen gradually to 1:1. In 15½-fl.oz. tins.

MULL-SOY POWDERED — start with 1 level tablespoonful in 4 fl.oz. water, strengthen gradually to 1 level tablespoonful in 2 fl.oz. In 1-lb. tins.

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1. Cahill, W. M.; Schroeder, L. J., and Smith, A. H.: J. Nutrition 28:209, 1944. 2. Stoesser, A. V.: Ann. Allergy 2:404, 1944. 3. Schroeder, L. J.; Cahill, W. M., and Smith, A. H.: J. Nutrition 32:43, 1946. 4. Stoesser, A. V.: J. Allergy 18:29, 1947. 5. Clein, N. W.: Ann. Allergy 9:195, 1951. 6. Sternberg, S. D., and Greenblatt, I. J.: Ann. Allergy 9:190, 1951. 7. Glaser, J., and Johnstone, D. E.: Ann. Allergy 10:433,1952. 8. Sobel, S. H.: Clin. Med. 59:362, 1952. 9. Callaway, J. L.: GP 8:75, No. 4, 1953. 10. Glaser, J., and Johnstone, D. E.: J.A.M.A. 153:620, 1953. 11. Johnstone, D. E., and Glaser, J.: J. Allergy 24:434, 1953. 12. Stoesser, A. V., and Nelson, L. S.: Journal-Lancet 73:487, 1953. 13. Burrage, W. S., et al.: M. Clin. North America, Philadelphia, W. B. Saunders Company, Sept., 1954, p. 1255. 14. Clein, N. W.: Pediat. Clin. North America, Philadelphia, W. B. Saunders Company, Nov., 1954, p. 949. 15. Clein, N. W.: Rocky Mountain M. J. 51:970, 1954. 16. Felsen, J.: Mod. Med. 22:178, No. 22, 1954. 17. Fontana, V. J.: GP 10:47, No. 6, 1954. 18. Fried, C. T., and Henley, W. L.: Pediatrics 14:59, 1954. 19. Glaser, J.: Ann. Allergy 12:30, 1954. 20. Glaser, J., and Johnstone, D. E.: J. Allergy 25:447, 1954. 21. Kesten, B. M.: New York J. Med. 54:2441, 1954 (Part I). 22. Moore, I. H.: Journal-Lancet 74:80, 1954. 23. O'Keefe, E. S.: M. Times 82:861, 1954. 24. Speer, F.: Ann. Allergy 12:168, 1954. 25. Wessel, M. A., et al.: Pediatrics 14:421, 1954. 26. Bigler, J. A.: Pediat. Clin. North America, Philadelphia, W. B. Saunders Company, May, 1955, p. 503. 27. Glaser, J.: New York J. Med. 55:2599, 1955. 28. Glaser, J.: A.M.A. Am. J. Dis. Child. 88:92, 1954; abstracted, Mod. Med. 23:122, No. 10, 1955. 29. Haas, S. V., and Haas, M. P.: Am. J. Gastroenterol. 23:344, 1955. 30. Koop, C. E., and Mellish, R. W. P.: Am. J. Clin. Nutrition 3:487, 1955. 31. Ratner, B., et al.: A.M.A. Am. J. Dis. Child. 89:187, 1955. 32.Collins-Williams, C.: J. Pediat. 48:39, 1956.

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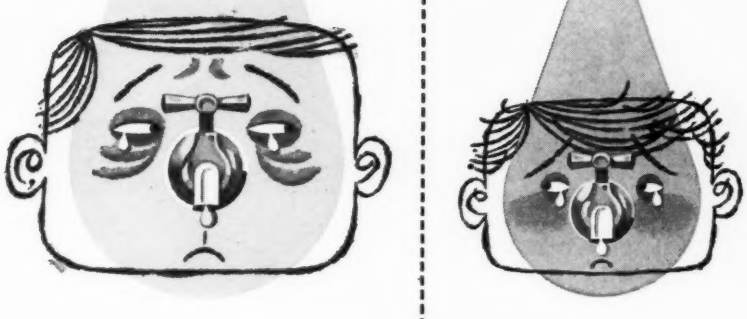

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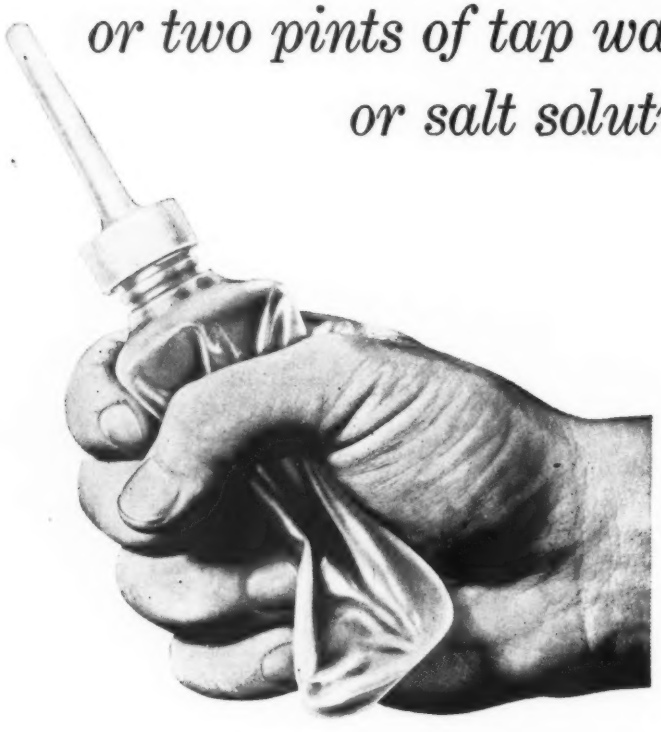

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1. College Study Report: Population Bulletin *11*:45 (June) 1955.
2. Tietze, C., in Dickinson, R. L.: Techniques of Conception Control, ed. 3, Baltimore, Williams & Wilkins Co., 1950, pp. 55-57.

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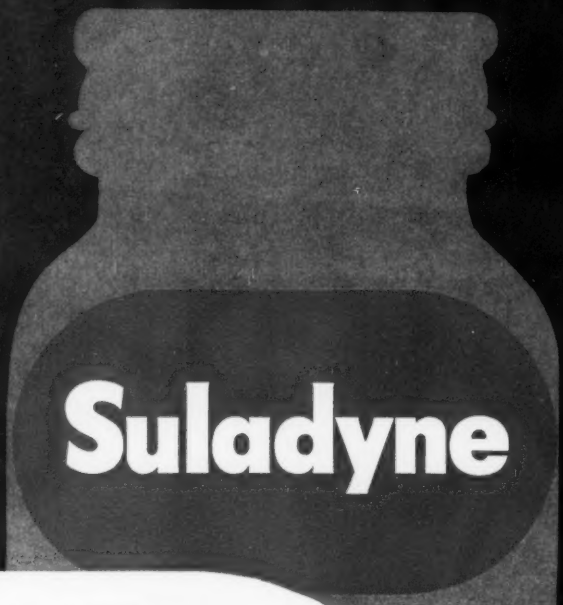

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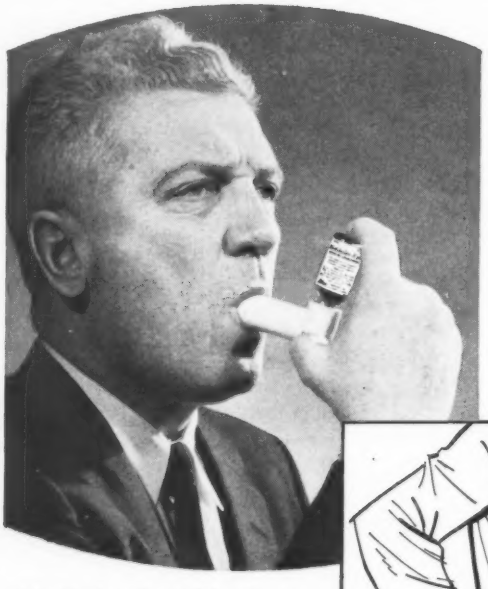

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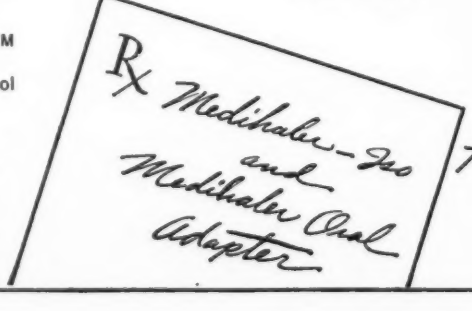

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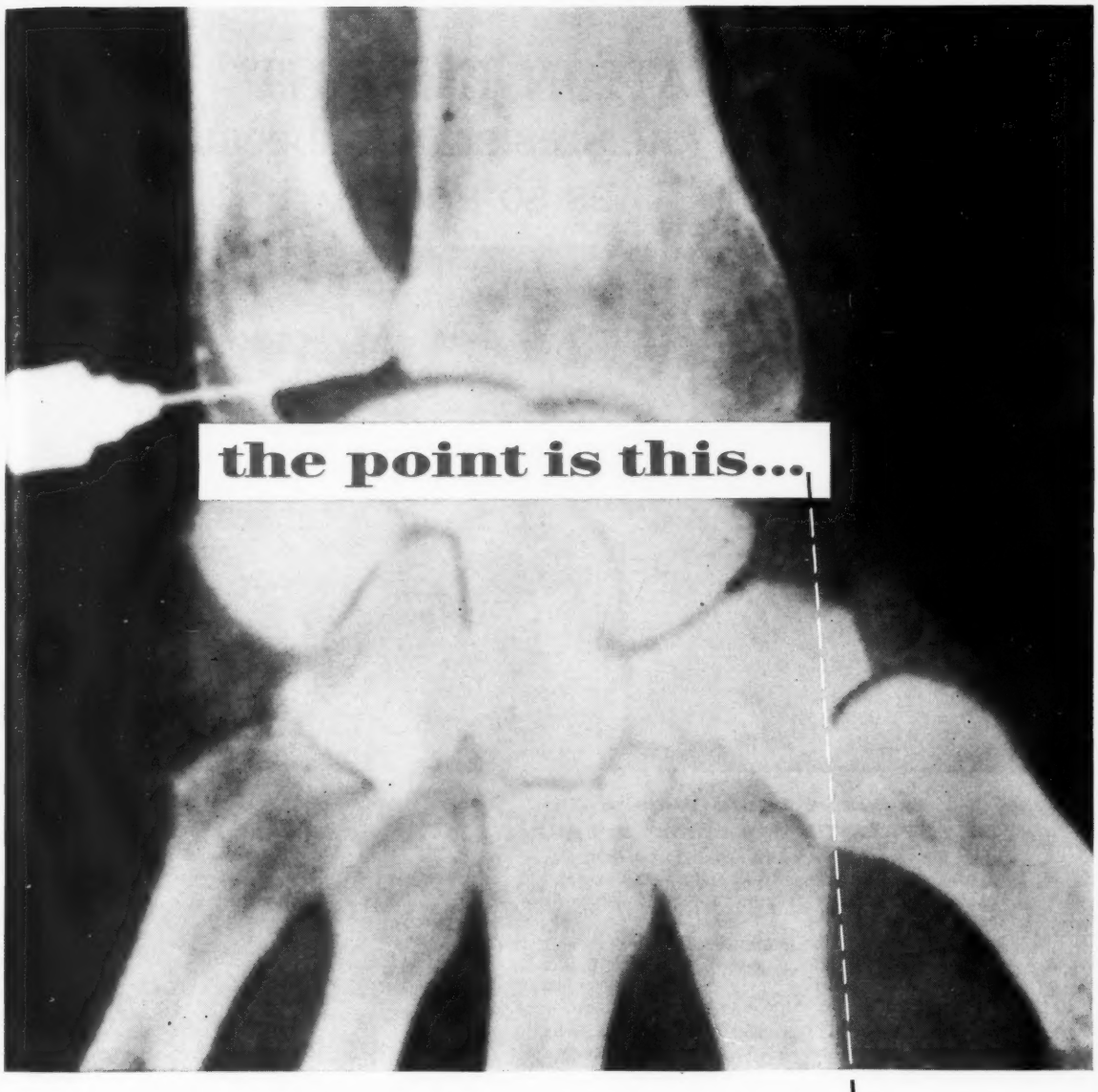

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References: 1. Hollander, J. L., *Ann. New York Acad. Sc.* **61**:511, May 27, 1955.
2. Hollander, J. L., *et al. J.A.M.A.* **158**:476, June 11, 1955.

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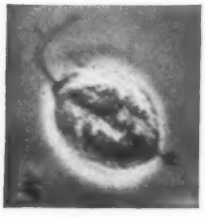

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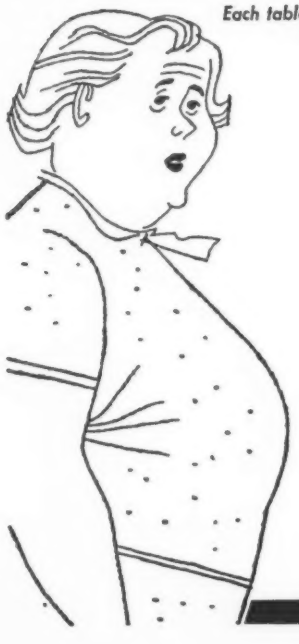

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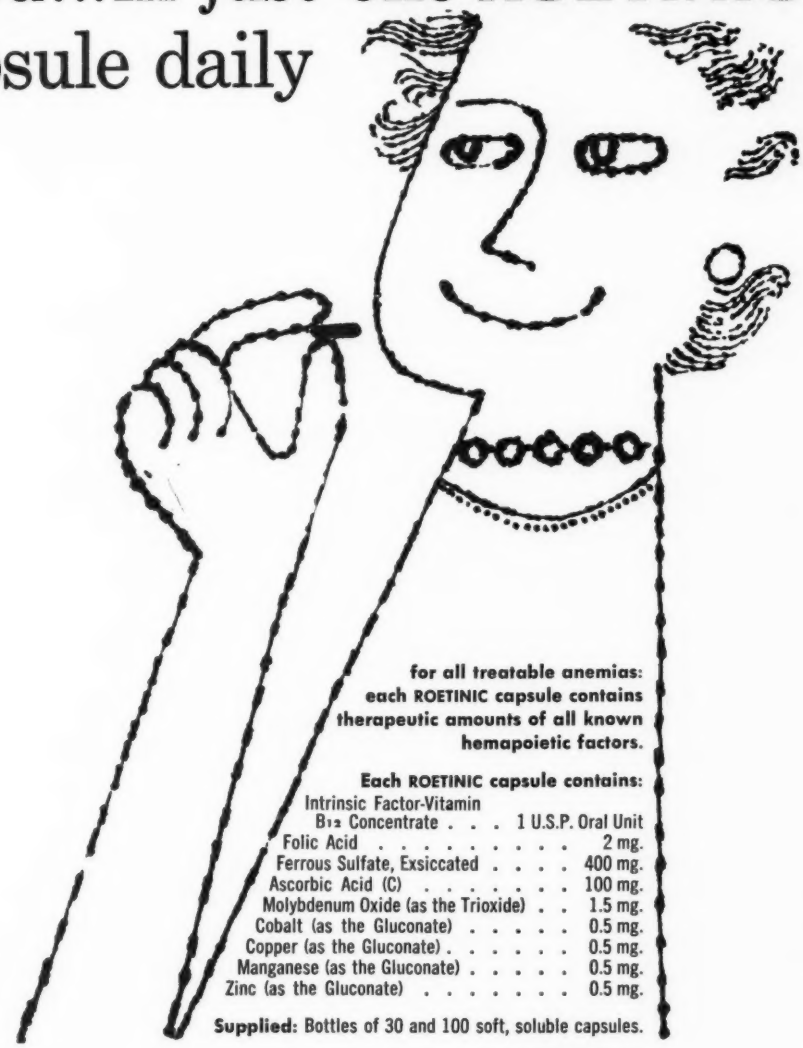

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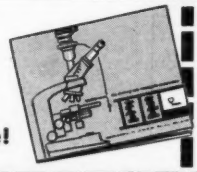

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1. Spiesman, M. C., and Malow, L.: Journal-Lancet (June) 1956.
2. Antos, R. J.: Southwestern Med. *37*:236 (April) 1956.
3. Wilson, J. L., and Dickinson, D. G.: J.A.M.A. *158*:261 (May 28) 1955.

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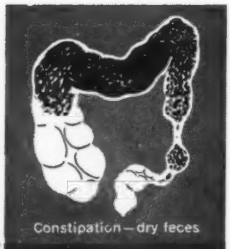

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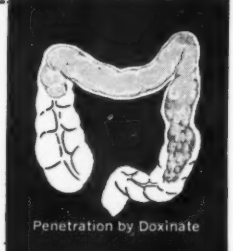

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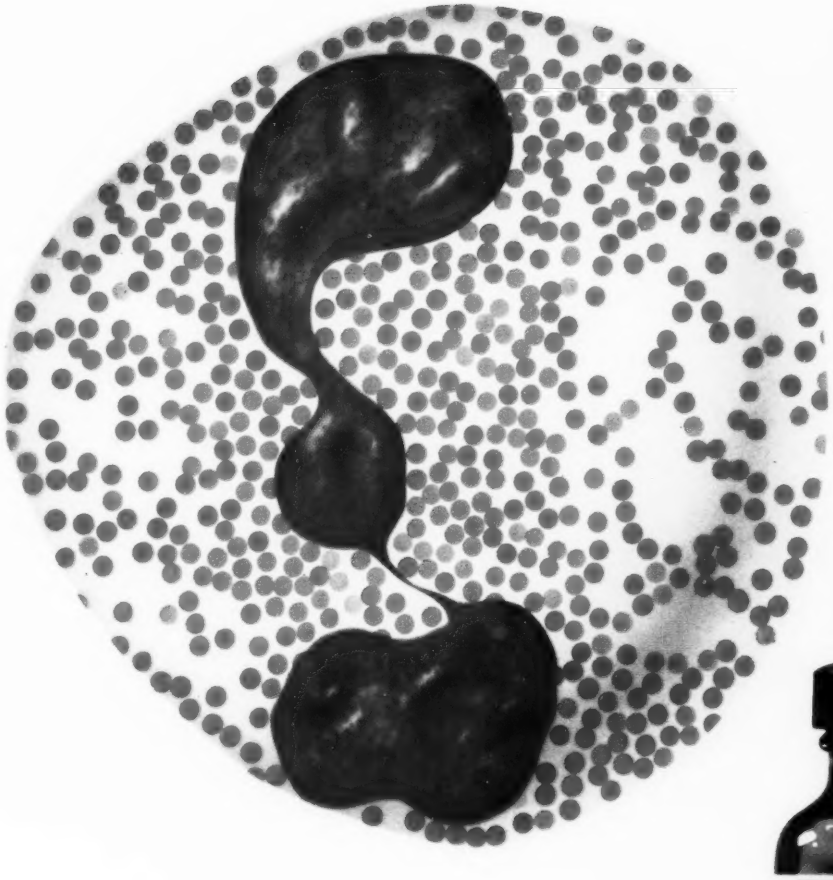

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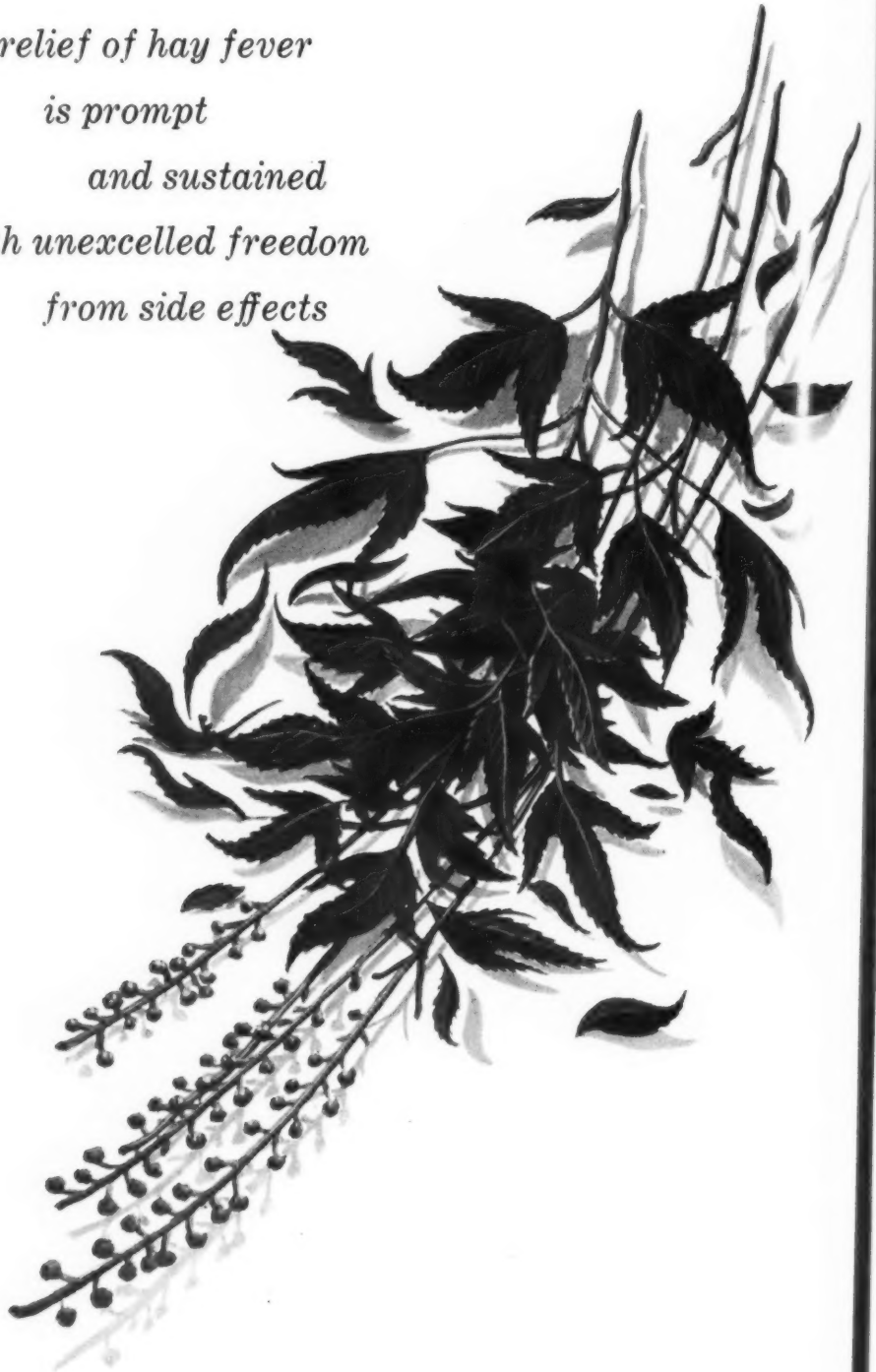

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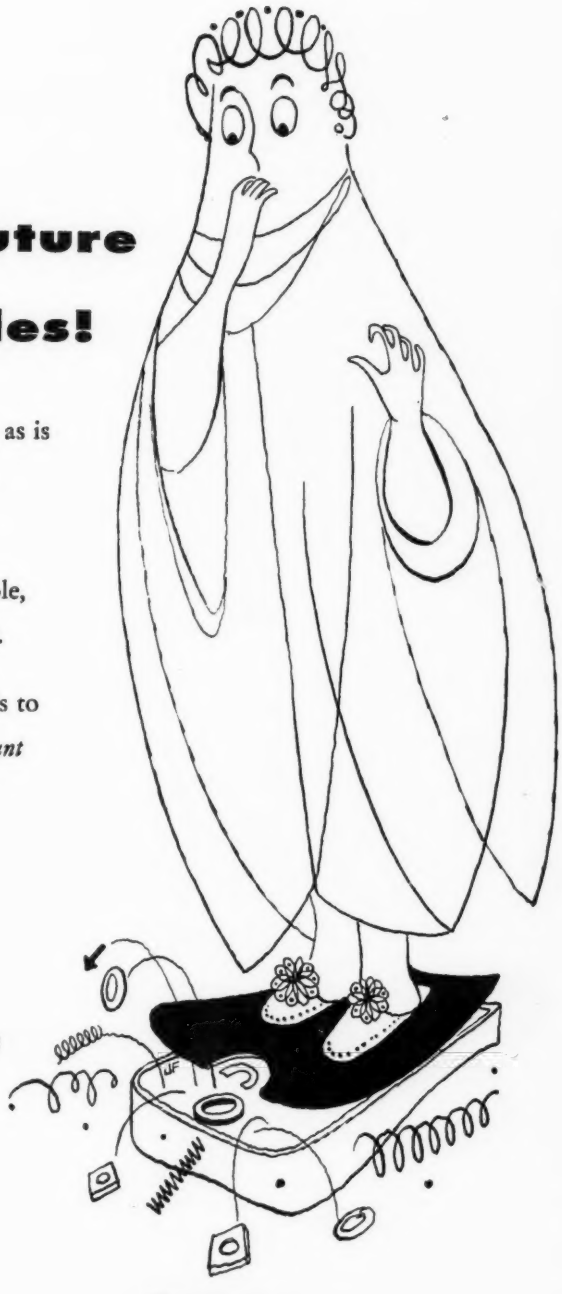

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New Concepts in the Diagnosis and Treatment of the Chronic Cardiac Cripple*

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Los Angeles

INTRODUCTION

During the past 10 years the medical world has witnessed the introduction of a multitude of new drugs and technics in its approach to the chronic cardiac patient. Many of these innovations were given wide clinical application and soon discarded as either ineffective or impractical. When the therapeutic air clears, one notices several important contributions which have proved themselves in trial and a few still in a controversial status but holding great promise for the future. It is the purpose of this paper to discuss those newer technics which have allayed much of the futility characterizing the situation of the chronic cardiac cripple.

There are two main categories of cardiac patients that make heavy demands on the therapeutic armamentarium of the practitioner. The first group consists of those individuals who present a pattern of intractable congestive heart failure, apparently refractory to the classical approach of digitalis, diuretics, and salt restriction. The second group includes the patient with chronic coronary insufficiency, who, because of severe anginal symptoms on the slightest exertion, is prevented from any productivity and presents a constant threat of coronary thrombosis.

CONGESTIVE HEART FAILURE

Etiology.—

It is not infrequent for the physician to be confronted by a patient who presents the obvious criteria of congestive failure, dyspnea, orthopnea, hepatomegaly, and dependent edema, and yet the application of his triad of therapy—digitalis, diuretics, and salt restriction—fails to effect significant improvements. In these cases a critical analysis is warranted to determine etiology, for there is a widespread tendency to diagnose congestive heart failure without a clear-cut impression concerning etiology. The most common etiologic factors in the young are rheumatic heart disease and congenital heart disease; in the older patient, hypertensive heart disease and coronary atherosclerotic heart disease. If diagnostic criteria of these usual diseases cannot be established, then several questions present themselves: (1) Are the objective and subjective findings truly due to congestive heart failure? (2) Is there an extracardiac factor present which precipitated or aggravated the failure? (3) Is this heart disease due to an unusual etiologic factor?

Dyspnea is probably the most common symptom presented by the patient with congestive failure and hence the physician should ascertain whether this complaint is a result of cardiac failure in the resistant patient or is due to extracardiac involvement. Dyspnea of chronic pulmonary disease is most commonly mistaken for dyspnea of cardiac origin. Chronic bronchial asthma, pulmonary emphysema, pulmonary fibrosis, and bronchiectasis may produce sufficient respiratory embarrassment to be mistaken for congestive heart failure. The presence of rales at the bases is quite common in these entities. The past history may be of value in eliciting these etiologic factors.

Repeated bouts of pneumonitis through the years should raise the suspicion of chronic bronchiectasis. Recurrent childhood bronchial asthma or a severe bout of pertussis may lead to pulmonary emphysema in the adult. Chronic pulmonary infection may lay the groundwork for later pulmonary fibrosis. A chest x-ray will frequently suggest the foregoing entities and particularly will absolve the heart if no evidence of cardiac enlargement is noted.

Edema may partially respond to diuretics and have no true cardiac basis.[1] The other causes of edema, well known but often overlooked, include cirrhosis of the liver, chronic phlebitis, hypoproteinemia, chronic renal disease, obesity, myxedema, lymphedema, and occasionally hormonal imbalances during menopause. Assuming that the above conditions have been ruled out and the physician convinced that the heart is the primary cause of the clinical picture, then he must search for either the less common etiologic factors in heart disease or extracardiac factors in the refractory patient.

In any discussion of the uncommon causes of heart disease, it is well to remember Hutchinson's admonition not to diagnose rarities, for common things occur most commonly.[2] It is true that the average physician is not as often confused by rare diseases as he is misled by the unusual manifestations of common diseases. However, though the incidence of a rarity, such as Ebstein's malformations of the tricuspid valve, may be as little

*Presented at the Fifty-Ninth Annual Convention of the American Osteopathic Association, Los Angeles, July 19, 1955.

as 0.001 per cent, it is 100 per cent as far as the patient who has it is concerned.

Reich[3] has written an extensive text on the uncommon heart diseases in which he mentions several hundred uncommon causes, from mycotic cardiac infections such as sporotrichosis to primary myocardial myoma. I shall mention only the "common" uncommon rarities. Among these are cardiac manifestations of a general disease such as amyloidosis, hemochromatosis, scleroderma, and lupus erythematosis. The diagnosis of the first two is best confirmed by needle biopsy of the liver, the latter two by skin biopsy.[4]

There are several important and more familiar entities which should be thought of in the etiologic search. Thyroid heart disease is by far the most common. Hypothyroidism may progress to a point of producing cardiac enlargement and congestive failure. This is particularly true of the post-thyroidectomy patient who has not been taking sufficient thyroid extract. In the cardiac clinic at the Los Angeles County Osteopathic Hospital, two such cases have been encountered recently. One was in a 45-year-old female who complained of dyspnea, orthopnea, and fatigue. The cardiac contour showed massive enlargement and the electrocardiogram low voltage and nonspecific T wave changes. She had had a thyroidectomy 4 years previously and voluntarily stopped taking thyroid extract 2 years after this. Her lack of response to digitalis and salt restriction was classic. Eight weeks following the daily administration of thyroid, she showed marked subjective improvement. The heart was reduced to normal size, and the electrocardiographic changes showed return to normalcy.

Thyrotoxicosis, often attended by an uncontrollable tachycardia or auricular fibrillation, may also be responsible for congestive failure. These patients do not necessarily show the characteristic signs of the disease, which explains why the masked thyrocardiac is so often overlooked. The thyrotoxic heart is particularly unresponsive to digitalis, and the lack of this response, particularly in the rapid fibrillator, should always suggest the disease. Medical or surgical thyroidectomy is the only answer in these cases.

The effect of vitamin deficiency on the heart and circulation has been known for many years. However, little progress in specific diagnosis and therapy has been made. Beriberi heart disease due to thiamine deficiency is perhaps the most widely accepted entity. The diagnostic criteria for beriberi heart disease are as follows:[5] (1) no other cause for heart disease elicited, (2) 3 or more months of thiamine-deficient diet, as in the alcoholic, (3) signs of neuritis, pellagra, or both, (4) enlarged heart with sinus rhythm, (5) dependent edema, (6) elevated venous pressure, and (7) recovery with decrease in heart size after administration of thiamine.

The chronic anemic state of itself rarely results in congestive heart failure;[6] however, cardiac hypertrophy may result from prolonged anemia and precipitate or aggravate organic heart disease.

Two final entities need to be considered—chronic constrictive pericarditis and arteriovenous fistula. Constrictive pericarditis should always be considered when the cause of increased venous pressure, ascites, hepatomegaly, and edema cannot be readily explained. Dyspnea is the most common symptom, and orthopnea is absent. In the majority of cases the chest x-ray shows a normal or slightly enlarged heart rather than the classically described small heart.[7] Fluoroscopic evaluation and a characteristic pressure curve on cardiac catheterization confirm the diagnosis. Arteriovenous fistula is most commonly caused by trauma to an artery and a vein lying in close proximity within a common sheath. Numerous vascular injuries incurred in World War II have stimulated great interest in the diagnosis and treatment of the disorder. The diagnostic criteria include a pulsating mass in the region of an old injury accompanied by a continuous thrill and bruit.

I have briefly explored some of the possible causes of unsuccessfully treated cases of congestive failure in which extracardiac or rare phenomena are involved. All too often, however, the diagnosis is obvious, the extracardiac and uncommon entities are ruled out, and the physician is faced with intractable congestive heart failure. The discussion to follow will indicate some of the newer concepts in the therapy of such patients.

Treatment.—

The effect of electrolyte metabolism has come to be regarded as the key to the treatment of the patient in congestive failure. The current literature overwhelmingly supports the thesis that sodium retention mediated by adrenal cortical action and augmented by renal function is the basis of this electrolyte metabolism. The regulation of electrolyte intake, more particularly sodium chloride, is admittedly essential in the control of edema, but the regulation of electrolyte excretion by means of organic mercurials has become the universal panacea in the control of congestive failure. Edematous fluid is an excess of the extracellular fluid, and hence its electrolyte content is virtually the same proportion as that of normal extracellular fluid. Since sodium salts comprise approximately 90 per cent of the electrolyte contained in such fluid, it means that for every 9 grams of sodium retained in edematous fluid, a liter of water is also present.[8] The kidney in congestive failure is most resistant to the excretion of this excess sodium.

Experimental studies show that a sodium intake as little as 200 mg. may be attended by an excretion rate via skin, feces, and urine of only 200 mg. or less,[9] and the electrolyte status remains unchanged in the edematous state. If the dietary intake of sodium in the untreated case was as little as 1 gram daily, there would be a rapid occurrence of edema, since it has been shown that in otherwise untreated congestive failure the urinary output of sodium may be less than 23 mg. The average low-sodium diets contain approximately 2 grams as contrasted to the normal diet of 10 to 14 grams.

Such studies obviously indicate that in the management of resistant congestive heart failure more than sodium restriction is required. The utility of mercurial diuresis in the reduction of edema has been established far more than two decades. The efficacy of a single intramuscular dose of 2 cc. of Mercuhydrin in producing marked diuresis attended by a 3- to 8-pound weight loss in 24 hours is unquestioned. Cases are on record wherein a single dose has produced a 25-pound weight loss overnight, and a weird instance of a 100-pound weight loss in 48 hours from a single dose has been reported.

It is therefore no wonder that the physician finds himself in a dilemma when salt reduction and intensive mercurial administration seem to fail in producing the desired diuresis and, indeed, produces a patient whose condition is more critical than before therapy was instituted.

It must be remembered that mercurial diuretic therapy in congestive failure can result in severe elec-

trolyte imbalances.[10] These disorders are frequently mistaken for intractable complications of congestive failure instead of for certain electrolyte imbalances which are usually amenable to treatment once properly recognized. There are two such clinical entities of electrolyte disturbance which are discernible and which have been emphasized in recent literature: (1) the low salt (sodium) syndrome or hyponatremia which may be of two varieties, either depletion hyponatremia or dilution hyponatremia, and (2) the low chloride syndrome or hypochloremic alkalosis.

The low salt syndrome, which is the result of excessive loss of sodium chloride from the extracellular fluid, should be easily recognizable, and prompt therapy can be lifesaving. Generally, this syndrome is found in the elderly cardiac patient who has been on a marked sodium-restricted diet and given prolonged courses of mercurial diuretics. There is a progressive reduction in serum sodium, chloride, and carbon dioxide. Underlying renal disease and intensive perspiration appear to be factors in this deficiency syndrome. In the depletion type of hyponatremia there is hemoconcentration indicated by high hematocrit levels, and plasma protein levels are usually elevated,[11] though the serum chlorides and sodium levels may be normal or only slightly below normal. Kidney output is reduced owing to the reduced glomerular blood flow secondary to reduced cardiac output.

Clinically, the patient presents a picture not unlike Addisonian adrenal cortical insufficiency. Lethargy and apathy are marked. The patient develops anorexia and nausea and vomiting, and abdominal cramping is common. The skin and tongue reveal evidence of dehydration, and uremia is often present. Treatment is parenteral administration of concentrated salt solution, 500 to 1,000 cc. of 3 per cent saline. Supplementing this with orally administered salt usually results in rapid clinical improvement.

In the dilution type of hyponatremia, the blood findings are quite different. The serum sodium and chloride values are very low, and hemoconcentration is not present. This variety seems to indicate an excess of antidiuretic hormone activity resulting in engorgement of the extracellular spaces with electrolyte-poor fluid. These patients have similar symptoms of anorexia, nausea, lassitude, and renal failure and show increasing edema despite large amounts of mercurials. This paradox of salt depletion and progressive edema is truly "intractable heart failure." The urgent need in this situation is not hypertonic saline but an attempt to encourage excretion of the excess water and improve myocardial function. This syndrome can be artificially produced by daily administration of Pitressin in patients in controlled heart failure in whom prompt water diuresis results when the Pitressin is removed. An anti-Pitressin fraction would certainly be welcome in these cases, but in the absence of such knowledge, treatment is directed toward increasing myocardial function by evaluation of the degree of digitalization, control of intercurrent infection, or evaluation of the serum potassium content.

It is admittedly difficult to evaluate the hyponatremic patient and decide whether he has the sodium dilution or sodium depletion variety. As a general rule, a patient with a low serum sodium level who is gaining weight and showing progressive edema in spite of intensive mercurial treatment strongly suggests dilution hyponatremia. A patient with a low serum sodium who has lost considerable edema and then presents reduced renal output associated with gastrointestinal symptoms suggests depletion hyponatremia.

The low chloride syndrome or hypochloremic alkalosis generaly develops about 1 week after the institution of mercurial diuretic treatment. The patient usually loses weight rapidly, and evidence of dehydration appears. Anorexia and weakness are evident. The patient then becomes refractory to the mercurial agent, and renal failure becomes evident. The patient with hypochloremic alkalosis has a dry tongue and mucous membranes. Latent tetany may be present because of a lowered ionizable serum calcium. The serum chloride is extremely low and the serum bicarbonate markedly elevated. Serum potassium levels are low but occasionally normal owing to hemoconcentration. An overall hypotassemia is present, and the clinical symptoms of potassium deficiency occur commonly. The treatment of this hypopotassemic, hypochloremic alkalosis consists of prompt administration of the deficient potassium and chloride ions, supplemented by calcium where indicated.

The low salt syndromes and hypochloremic alkalosis may be confused by the physician. As a general rule, low salt syndromes are less common, are chronic in onset following prolonged mercurial administration, and show low serum sodium and chloride levels with a normal potassium level and carbon dioxide combining power. Hypochloremic alkalosis is fairly frequent and generally acute in onset, following short-term mercurial treatment, and shows a normal serum sodium level with low chloride and potassium levels and decreased carbon dioxide combining power.

CORONARY ARTERY DISEASE

The remaining portion of this paper will be concerned with a discussion of the second large group of cardiac cripples—patients with coronary artery disease. It is generally accepted that arteriosclerosis is the greatest killer of civilized man, and yet knowledge concerning its causation and nature is primitive. Current research in this field is pointing the way to newer therapy for disabling coronary artery atherosclerosis. Much of the early results is confusing, controversial, and too premature to draw any final conclusions; however, there is much that is positive and factual and too provocative to be overlooked in the clinician's desperate attempt to treat this large group of unfortunate patients.

Etiology.—

Certain factors correlate highly with the incidence of atheromatosis. They include hyperlipemia, heredity, maleness, high lipid diets, and hypertension. The factors of high lipid diets and hyperlipemia are undergoing exhaustive research, and it is in this regard that the role of heparin in the causation and possible treatment of coronary atherosclerosis has attracted wide attention.

The exact mechanism of atherogenesis has plagued investigators for years. A current acceptable concept is the filtration theory. This is based on the premise that lipoproteins are filtered from the plasma by the intima of the artery owing to lateral pressure against the arterial wall. These filtered lipoproteins are then deposited in the intimal lining where they act as foreign lipid bodies. Most of the filtered lipids are picked up from the arterial wall by way of lymph channels or adventitious capillaries. Some of the material, however, remains behind, within the intima, and early in the course of the disease there is an increase in total lipid composition of the vessel wall. A tissue reaction

to these substances then ensues, fibroplastic proliferation, changes in the subintimal ground substance, and necrosis resulting in the ultimate narrowing or closure of the lumen of the vessel.

Approximately 3 to 5 per cent of plasma protein consists of a combination lipid and protein, referred to as lipoprotein. These lipoproteins of different molecular weights can be fractionated by ultracentrifugal methods. Gofman[12] has provided most of the information on the role of these lipoproteins in the mechanism of atherogenesis. According to his ultracentrifugal studies, lipoproteins are divisible into molecular species with flotation rates from 2 to 40,000. Cholesterol is in greatest concentration in the lipoprotein of the lower molecular weight. In essence, it is Gofman's belief that certain lipoproteins, those with flotation rates of 12 and 20 Svedberg units, are atherogenic since the presence of these molecules was statistically related to atherogenesis. The role of heparin in influencing these concentrations is under intensive investigation.

Heparin Therapy.—

Heparin is a normal physiologic substance found in all mammals, and its endogenous source is chiefly the mast cells of the body. At autopsy Cairus and Constantinides[13] analyzed mast cell concentration in 142 subjects classified as atherosclerotic and nonatherosclerotic. It was reported that atherosclerotics had 40 per cent less mast cells than nonatherosclerotic persons of the same age and sex. The younger males in the group had 45 per cent fewer mast cells than the females in the same age group. Since the lower mast cell concentrations were statistically related to atherogenicity, it was inferred that atherosclerosis could be due to an endogenous heparin deficiency. Anfinsen[14] reported that heparin may be an important factor in blood lipid homeostasis. The accumulation of abnormally low density lipoproteins in plasma was influenced favorably by the administration of heparin. This certainly suggests the analogy that abnormal plasma lipids may be due to deficiencies of endogenous heparin just as elevated plasma glucose results from insulin deficiency in diabetes mellitus.

Boyle[15] studied the effects of long-term heparin administration on serum lipoprotein levels in hypercholesterolemic humans and reported a marked reduction in the low density beta components as well as a reduction in all serum lipids including a decrease in the cholesterol-phospholipid ratio.

Engelberg[16] reported administration of heparin to a group of thirty-six atherosclerotic persons resulted in increased tissue oxygen utilization and reversal of anoxic T waves in the electrocardiogram which recurred when heparin administration was stopped. He also correlated the plasma heparin levels and serum low density lipoproteins, and his findings lend support to the possibility that a deficiency of heparin production in the body is etiologically related to the lipid metabolic defects inherent in the production of atherosclerosis. Engelberg has been responsible for much of the work on the clinical application of heparin in the treatment of coronary artery disease. Highly concentrated aqueous heparin preparation containing 200 mg. per cc. given subcutaneously three times weekly is recommended. Subjective improvement in a large number of these patients warrants a careful evaluation of this type of therapy, for there is much objective evidence available that heparin may retard the atherosclerotic disease process through its ability to alter serum lipoprotein patterns toward normalcy and to clear lipemic serum.

Treatment by Lowering Thyroid Activity.—

The improvement in symptoms in the patient with chronic coronary disease associated with the production of the hypothyroid state by surgery has long been observed. Blumgart, Levine, and Berlin[17] first reported in 1933 the beneficial effect of thyroidectomy in these patients. With the advent of thiouracil and succeeding derivatives used in the medical management of thyrotoxicosis, this approach was also applied to the patient with disabling anginal symptoms. Raab[18] reported marked improvement in seven out of ten patients with angina pectoris treated this way. The toxic reactions to these drugs discouraged their widespread use. The rationale of all these approaches is primarily symptomatic; it is directed at reducing the metabolic requirements of the heart by reducing total body metabolism.

Blumgart, Freedberg, and Kurland[19] were the first group to apply radioactive iodine as a safer and simpler method of lowering thyroid activity in patients with severe cardiac disease. Eight out of thirteen of their anginal patients reported on in 1950 were markedly improved with I^{131}. Since then, clinics throughout the country have applied this form of therapy to the coronary insufficiency cripple. Jaffee[20] reported on 172 patients recently, and the follow-up on 100 of these cases over a 2-year period revealed the following results: 61 per cent good, 26 per cent fair, and 13 per cent poor. No contraindications to this therapy in properly selected cases were found. No harmful effects have been observed.

The technic involves the use of multiple small oral doses of radioactive iodine averaging 30 millicuries of radioiodine per dose. In the past year a radioisotope installation has been instituted at the Clinic of the College of Osteopathic Physicians and Surgeons in Los Angeles, and, hence, this promising form of therapy will be made readily available to members of the profession.

Surgical Treatment.—

The ultimate dilemma in the treatment of chronic coronary insufficiency is reached when a patient has had an adequate trial of heparin treatment and is finally subjected to radioactive iodine and still presents disabling anginal symptoms. The outlook tends to be extremely pessimistic in these cases, and the prognosis for survival is grave. There is yet one final approach to be considered—direct surgical attack on the inadequate myocardial circulation. To be sure, this might be construed as an extremely radical approach, even to the most enthusiastic physician or surgeon. However, the rationale, experimental work, and application to human subjects of surgery to improve myocardial circulation have made remarkable strides in recent years.

The term "coronary insufficiency" refers to an imbalance between the required amount of coronary blood flow to the myocardium and the actual amount that is available. This imbalance may result in mild ischemic myocardial changes at one extreme and to massive transmural myocardial infarction at the other.

In appraising the rationale of a surgical approach to this problem, the normal anatomic blood supply to the heart should be considered. Basically there are three natural mechanisms of myocardial nutrition. The first and most important is the coronary arteries. The second is an elaborate system of vascular channels which are found on the endocardial surface of the cardiac chambers and which communicate with the myocardial capillary bed directly. In lower forms, such

as fish, and Amphibia, a major portion of myocardial nourishment is derived directly from the blood within the cardiac chambers. This is also true in the 5-week-old human embryo.[21] The third source of nourishment for the heart is the capillary vascularity present at the junction of the visceral and parietal pericardial reflections. These vessels originate from intercostal branches and, following trauma or disease of the pericardium, adhesions develop between the parietal and visceral layers of pericardium, resulting in greater vascularity to the cardiac surface.[22]

Surgical procedures employed to increase blood flow through the myocardial vascular bed are termed revascularization technics.

There are two main types of operations currently employed. The first is a surface revascularization technic used by Bailey and Likoff[23] and by Schildt, Stanton, and Beck.[24,25] This operation consists of intrapericardial insufflation of a powdered silicate or asbestos, which are inert substances but stimulate the formation of new arteriolar channels arising from the inflammatory adhesions which result. Though other more complex methods of surface revascularization have been used,[26-28] pericardial powdering is the most satisfactory because of the relative ease and safety of the operation. Beck and Leighninger[29] have reported their most recent series of twenty-six patients undergoing this type of surgery in which there was one postoperative death. In this group 84 per cent reported either no angina or marked improvement 6 months postoperatively.

The second type of operation may be referred to as a total revascularization technic. This is the Beck II type of operation in which a free vein graft placed between the coronary sinus and the aorta raises the pressure in the coronary venous circulation producing a retrograde flow of oxygenated blood resulting in a perfusion of the coronary veins with arterial blood. It has been amply demonstrated that this arterial blood which enters the venous system does traverse the capillary bed of the heart. This procedure carries a much higher mortality rate. In Beck and Leighninger's[29] series of 108 cases, the operative mortality was 26 per cent and in Bailey and Likoff's series the mortality in fifty-three patients was 16 per cent. Both types of operation have been shown to be beneficial. The Beck II operation is more effective in reducing mortality from coronary insufficiency and shows evidence of producing greater intercoronary development and improvement in the distribution of blood within the various myocardial layers and auxiliary luminal mechanisms of cardiac nutrition. Against these advantages is the higher operative mortality rate. While it is true that a lesser revascularization is produced by intrapericardial insufflation of powdered silicate, this procedure is a relatively simple surgical technic and is done through a small extrapleural anterior thoracic incision.

In the selection of cases, age is no factor except that the more conservative procedure is more justifiable in patients over the age of 60 who have had one or more infarctions. Patients in actual congestive failure are not candidates for operation.

Most commonly selected for the surgical treatment of coronary artery disease are intractable chronic anginal patients (with or without previous myocardial infarction) who have not responded to medical management and are in the age group of 45 to 55 years and hence give evidence of a more than usual tendency toward the progression of coronary atherosclerosis.

SUMMARY AND CONCLUSIONS

Some of the new technics in the treatment of the chronic cardiac cripple have been presented. Two main groups of cardiac patients have been discussed, those with refractory chronic congestive failure and those with coronary insufficiency who present a constant threat of coronary thrombosis.

In the refractory congestive failure group, a critical analysis is warranted to rule out extracardiac factors and rare causes of heart disease and to determine whether the findings are truly cardiac in origin. Electrolyte imbalances, such as hypochloremic alkalosis and hyponatremia, which may complicate the treatment of congestive failure have been discussed.

The newer approaches to treatment of chronic coronary insufficiency have been presented. The extremely provocative role of heparin in atherogenesis and its possible application in therapy have been reviewed. The application of radioiodine therapy has been briefly discussed. The surgeon's radical approach to coronary insufficiency has been presented with statistics on results in recent surgical revascularization technics.

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REFERENCES

1. Hyde, L., and Hyde, B.: Diagnostic and therapeutic value of mercuhydrin (sodium methoxyoximercuripropylsuccinylurea with theophylline). Experience in differential diagnosis of basal rales. Ann. West. Med. & Surg. 3:335-338, Oct. 1949.

2. Hutchison, R., ed.: Index of treatment. Ed. 10. John Wright & Sons, Bristol, Eng., 1931.

3. Reich, N. E.: Uncommon heart diseases. Charles C Thomas, Springfield, Ill., 1954.

4. Pruitt, R. D., Daugherty, G. W., and Edwards, J. E.: Congestive heart failure induced by primary systemic amyloidosis; diagnostic problem. Circulation 8:769-778, Nov. 1953.

5. Blankenhorn, M. A., *et al.*: Occidental beriberi heart disease. J. Am. M. A. 131:717-726, June 29, 1946.

6. Porter, W. B., and James, G. W., III: Heart in anemia. Circulation 8:111-116, July 1953.

7. Chambliss, J. R., *et al.*: Chronic cardiac compression (chronic constrictive pericarditis); critical study of 61 operated cases with follow-up. Circulation 4:816-835, Dec. 1951.

8. Myers, G. B., *et al.*: Treatment of congestive failure refractory to standard regimen. J. Michigan M. Soc. 49:1434-1439, Dec. 1950.

9. Arn, K. D., and Reimer, A.: Minimal sodium losses through skin. J. Clin. Investigation 29:1342-1346, Oct. 1950.

10. Danowski, T. S.: Electrolytes and congestive failure. Ann. Int. Med. 37:453-464, Sept. 1952.

11. Holley, H. L.: Salt depletion syndrome. South. M. J. 45:153-160, Feb. 1952.

12. Gofman, J. W., *et. al.*: Blood lipids and human atherosclerosis. Circulation 7:702-706, May 1953.

13. Cairns, A., and Constantinides, P.: Mast cells in human atherosclerosis. Science 120:31-32, July 2, 1954.

14. Anfinsen, C. B.: Fat metabolism symposium. Johns Hopkins Hospital, Baltimore, Feb. 5, 1954.

15. Boyle, E.: Program, Eighth Annual Meeting of the American Society for the Study of Arteriosclerosis. Oct. 24, 1954.

16. Engelberg, H.: Program, Eighth Annual Meeting of the American Society for the Study of Arteriosclerosis. Oct. 31, 1954.

17. Blumgart, H. L., Levine, S. A., and Berlin, D. D.: Congestive heart failure and angina pectoris; therapeutic effect of thyroidectomy on patients without clinical or pathologic evidence of thyroid toxicity. Arch. Int. Med. 51:866-877, June 1933.

18. Raab, W.: Thiouracil treatment of angina pectoris; rationale and results. J. Am. M. A. 128:249-256, May 26, 1945.

19. Blumgart, H. L., Freedberg, A. S., and Kurland, G. S.: Hypothyroidism produced by radioactive iodine (I^{131}) in treatment of euthyroid patients with angina pectoris and congestive heart failure: early results in various types of cardiovascular diseases and associated pathologic states. Circulation 1:1105-1141, May 1950.

20. Jaffe, H. L.: Multiple small dose radioiodine technic for treatment of severe cardiac disease in euthyroid patients. Ann. West. Med. & Surg. 5:916-919, Nov. 1951.

21. Keith, A.: Human embryology and morphology. Ed. 5. William Wood & Co., Baltimore, 1934.

22. Bailey, C. P.: Surgery of heart. Lea & Febiger, Philadelphia, 1955.

23. Bailey, C. P., and Likoff, W.: Surgical treatment of coronary

insufficiency. Paper read at Sectional Meeting of American College of Chest Physicians, Miami, 1954.

24. Schildt, P., Stanton, E., and Beck, C. S.: Communications between coronary arteries produced by application of inflammatory agents to surface of heart. Ann. Surg. 118:34-45, July 1943.

25. Stanton, E. J., Schildt, P., and Beck, C. S.: Effect of abrasion of surface of heart upon intercoronary communications. Am. Heart J. 22:529-538, Oct. 1941.

26. O'Shaughnessy, L.: Experimental method of providing collateral circulation to heart. Brit. J. Surg. 23:665-670, Jan. 1936.

27. Beck, C. S.: Development of new blood supply to heart by operation. Ann. Surg. 102:801-813, Nov. 1935.

28. Carter, B. N.: Discussion (p. 861-862) of Development of new blood supply to heart by operation. C. S. Beck, Ann. Surg. 128:854-864, Nov. 1948.

29. Beck, C. S., and Leighninger, D. S.: Operations for coronary artery disease. J. Am. M. A. 156:1226-1233, Nov. 27, 1954.

Manipulative Therapy for the Aging

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INTRODUCTION

Age, as it is commonly calculated, denotes the number of years in a person's life, but it is physiologic age, rather than chronologic age, which is important in the consideration of manipulative therapy for the aging. An individual may be old in years yet young in body. Conversely, a man physiologically old may be chronologically young. This distinction between physiologic and chronologic age is an important one, for manipulative therapy needs to be administered to each patient according to his special needs and not according to the number of his years.

PHYSIOLOGIC AGE

The determination of true physiologic age is difficult--even the chronologic age is not always easily ascertained. Le Comte du Noüy[1] developed a mathematical equation which he believed to express true physiologic age as a function of the rate of wound healing.

For the osteopathic physician, the sense of touch is the most valuable means of ascertaining physiologic age. The degree of tone or flaccidity of the skin and muscles, the texture and amount of subcutaneous fat, the range and freedom of joint movement, the presence or absence of crepitus in the joints—these are signs which the palpatory sense may elicit.

Signs of aging are also apparent in posture, gait, circulation, muscular power, and coordination. Crampton[2] devised the following test of physiologic condition: The pulse rate and blood pressure are determined with the patient lying down and then are rechecked after the patient has been standing erect for 2 minutes. If the individual is in perfect condition, his blood pressure should not increase more than 4 to 10 mm. and his pulse rate should not increase more than four beats per minute. Few people will be found who can measure up to this test in this mechanized age where the gasoline engine is substituted for the slower pace of muscular exertion.

The effect of trauma on the patient and his response to it are further indications of physiologic age. The diversity of effects which are associated with strain or injury are of great importance. A traumatic incident that seems of slight importance may initiate a series of disorders that appear to be unrelated to the trauma. Many times the constipation which occurs concomitantly with a back sprain will prove more distressing and require longer treatment than the muscular disorder. Trauma superimposed upon a quiescent arthritic condition may result in a reactivation of the arthritis, causing distress which is all out of proportion to the initiating circumstance. Cause and effect must be carefully studied in each individual.

DIAGNOSIS

Worcester[3] states that there are no diseases peculiar to old age, nor any from which the aged are exempt. The various modifications of disease in the aging are more important than their relative frequencies. Arthritis, osteoporosis, and cancer are conditions which should be kept in mind when examining the elderly patient as they may be relative or absolute contraindications for manipulation.

Thorough examinations should be made to determine the cause of the patient's symptoms, but care should be exercised in examining the elderly patient so that undue attention is not given to any one part of the examination to the extent that the patient continues to focus his attention upon it. Many times a physician's unexplained technical remark or careless phrase will leave the patient mentally upset and concerned about himself. This is particularly true of the elderly patient who may have a great deal of time to think about himself and his condition.

Postural examination may disclose the basis for the patient's structural problems. Chronic postural changes and osteopathic lesion patterns are prevalent in the aged, particularly in those who are prone to exhibit arthritic manifestations. Often the problem is not in locating the lesion, but in deciding which lesion to treat. The acme of diagnostic skill is required to determine what not to treat as well as what to treat.

All elderly people who present histories of trauma should be x-rayed before the use of manipulative therapy. The presence of compression fractures and osteoporosis is difficult to determine without the assistance of x-ray examination.

Weight-bearing points in the aging should receive particularly close scrutiny because of the possible presence of osteoarthritis, and because the physiologic function of the body is in direct proportion to the patient's ability to be active. Tests of motion, especially comparison tests of joint mobility, are important in examination of the extremities. One side should be compared with the other.

The concept of dynamic or functional mobility should be borne in mind in studying the elderly patient. A complete range of joint movement is not necessary for a joint to be asymptomatic and entirely adequate for the patient's needs. Each individual maintains a range of motion in accordance with his environment, and as long as he does not exceed his functional range of movement, he should have no difficulties. However, if he exceeds his limitations, or if his range of movement is diminished through injury or disease, symptoms of joint dysfunction arise. Thus, the important thing in diagnosis is to determine the amount of functional mobility required by the individual.

Any of the common postural problems may afflict the aged—short leg, scoliosis, lordosis, and kyphosis. Of these, the anterior-posterior spinal curves are most frequently found to produce symptoms. Kyphosis with its related shoulder problem is one of the commoner complaints. Lordosis accompanied by excessive weight is often responsible for low-back pain and fatique. Comfort may be obtained in these cases by means of stretching technics, mild corrective exercises, or the use of supports. Weight reduction may be suggested, but should not be enforced if it interferes unduly with the patient's enjoyment of life.

OSTEOPATHIC MANIPULATIVE TREATMENT

After the diagnosis has been established, the plan of treatment should be discussed with the patient and his family if they are present. Enlisting the family's assistance often insures the cooperation of the patient. Treatment may be classified as: (1) curative, that is, giving permanent results, such as for a sprain or strain of temporary significance; (2) palliative, that is, symptomatic, relieving the patient of muscular aches or pains; and (3) maintenance. This last is also palliative in that it attempts to keep the patient comfortable and prevent further disturbance or maintains his level of physiologic performance.

In most cases treatment is designed to bring the patient comfort and some relief from his chronic disturbances. The aged patient seldom expects a cure, nor does he desire one if it means sacrificing the comfort to which his years entitle him. He prefers the maintenance of his status quo to a radical reorganization of his life.

General Rules.—

Re-emphasis of some of the general rules for manipulative therapy as it is applied to the aging may be helpful:

1. Both the patient and the physician should be relaxed. Manipulative treatment is difficult enough to practice without having to work against the resistance of the patient.

2. The maximum cooperation of the patient should be insured by making certain that he is in a comfortable position before starting treatment. He should be allowed ample time to adjust himself on the table. The physician should be careful to avoid giving the impression that he is impatient; this he can do best when he himself is relaxed. Some patients cannot lie on their sides because of discomfort from rib or shoulder problems. Others prefer to have their heads slightly elevated. Arthritic knees are less painful in the supine position when they are partially flexed, with a pillow under them. The patient who has an arthritic hip can often tolerate lying on his side if a pillow is placed between his legs.

3. In general, movements should be slow, combining force with skillful application. All initial movement should be slow, until the patient has relaxed and his confidence has been gained.

4. Excessive force should never be applied against active resistance from the patient. Forceful technics should not be used on any elderly patient on his first visit. The first visit should be used to gain his confidence, which can hardly be expected to follow an adverse reaction to excessive treatment. Such a reaction to the first treatment may limit the physician's opportunity to do anything further for the patient, so it is well to withhold forceful corrective procedures until you have first ascertained how the patient responds to a gentle treatment.

The patient's judgment as to how strenuous a treatment he can stand is not always reliable. Time should always be taken on his first visit to acquaint the patient with the common types of reactions to treatment. On his next visit ask the patient to let you know how he responded to treatment given on the previous visit.

Comfort should epitomize the aims of manipulative therapy. Treatment should be designed to give maximum relief with minimum distress. In the treatment of the aged, even more than in the treatment of the young, skillful manipulation is required. The application of the correct amount of force to the joints and tissues, the timing of the movements, and the ability to recognize when to stop are of the utmost importance in skillful technic.

Mennell[4] speaks of joint elasticity, which he states varies with age and function. As an example he discussed an English family of acrobats, who for several generations followed this occupation. This family observed that if they did not start training the children before the age of two they could never recover some of the joint elasticity that was lost. Mennell believes that joint elasticity is lost in varying amounts throughout life, but that the loss is greatest in the extremes of infancy and old age. Thus, treatment should be designed to restore the aging patient's functional mobility rather than the complete range of normal joint motion. No elderly patient should be treated as if rejuvenation were possible.

Technics.—

Osteopathic manipulative technics can be classified under three headings:

1. Corrective technic, that is, procedures designed to restore joint mobility and normalize pathologic changes in the adjacent soft tissues. This technic involves the use of specific localized force applied to a joint to free it up or release it so that its mobility is restored. In the aging it may be defined better as specific treatment that restores functional mobility to the joint within the range of the individual's requirements.

2. Articulatory technic, that is, procedures designed to carry a joint passively through its range of motion. Diagnostic procedures may be classified as articulatory. A test of joint mobility or an articulatory test of joint resistance should precede the use of forceful technics. "When in doubt, articulate" is a safe rule to follow.

3. Soft tissue technic, that is, procedures designed to effect relaxation of muscles and ligaments. This is important in the preparation of joints for more thorough treatment as well as to allay symptomatic effects of more forceful manipulative procedures. Some problems predominantly involve soft tissues, such as muscular difficulties of the extremities. Care must be used in employing soft tissue technic because of the reactions that follow overtreatment or too strenuous treatment. There are no hard and fast dividing lines in the classification of a technic, and a technic may be classified under more than one heading.

Exaggeration of the lesion is an articulatory maneuver which may cause sufficient stretching and relaxation of the soft tissues to permit the use of less force in the corrective procedure. Exaggerating the lesion was formerly emphasized a great deal, but lately has not been mentioned too frequently. It is still worth while and often produces surprising results.

Gentle traction and articulating technics that em-

ploy breathing movements are very suitable for use on the elderly patient. This is particularly true in the cervical region. Here the desired result may be obtained by localizing the force at the site of the lesion and applying traction through the upper segment of the two vertebrae that are in lesion. A great deal of force is not required, and the effect may be very specific. When treating a rotation lesion, the patient is positioned for correction by localizing the force at the site of the lesion and removing the slack, and then having the patient breathe in and out a couple of times. If this fails, a gentle teasing force in the direction of the usual corrective maneuver may give the desired result.

When using soft tissue technic, the less time spent on the patient, the slower the movement should be. Besides being relaxing, slow movement creates the impression that more time is being spent on the patient, an important consideration in treating the aging patient.

Sudden or swinging movements in the cervical area should be avoided because they are apt to make the elderly patient dizzy, and also arthritis is often present in the cervical spines of people from age 30 upwards. A quick movement against resistance may cause aggravation of an arthritic condition. Even excessive use of traction may stir up some cervical conditions. It has been said that a patient will forgive almost any reaction to treatment but a painful neck or a headache.

The treatment should end with the patient resting for a few minutes or with the application of deep, firm, soft tissue treatment applied to the upper thoracic vertebrae to counteract the cerebral ischemia that may come from sudden rising. If the facilities of the office do not permit the patient to rest there, he should be encouraged to rest at home following treatment.

The length of treatment varies with the patient and his particular problem. In general, the older the patient, the shorter the treatment should be. If the patient believes that he is buying a portion of your time, that time should be used in diagnosis, in talking to the patient, or in using a slower pace.

Treatments should be spaced according to the nature of the problem and the patient's reaction to treatment. For maintenance treatment, visits should not be more frequent than twice weekly. Many patients can be maintained on less treatment than is usually administered.

Attempts to break down postural compensation are seldom justified. Treatment of lesions within the patient's compensation pattern may suffice to give relief and comfort. Only a continued lack of response to good specific technic is an indication for an attempt at postural readjustment. One elderly woman complained bitterly to me that she had been x-rayed and told that she had to have a lift in her shoe. She said it was for the same old problem she had had all her life and that just one or two manipulative treatments had always straightened her out. A trial of treatment is always indicated before even suggesting the use of such measures as lifts in the aging.

This does not mean that lift therapy should never be used. In a London clinic I had a patient in her 60's who was physiologically 10 to 20 years younger. She had had a history of recurrent backache with stress at the lumbosacral junction. A trial of treatment did not produce lasting results. Postural examination had revealed a definite lowering of the right iliac crest, and x-ray examination confirmed the existence of a short leg. When lift therapy was given a trial, the patient improved. During the 6 months she was kept under observation, she had almost complete relief of symptoms.

Specific Manipulation.—

Whether to use specific or general treatment is still a much debated subject. For a long time it was puzzling to me to hear some of the prominent men in our profession discourse on the subject of specific manipulation and then seem to cover the body from head to toe. I have since learned that a general survey of the patient does not preclude specificity of treatment. A short, specifically applied treatment with general coverage may be the required therapy for the aging patient with osteoarthritis. The effect of treatment in this case is kinesiologic; it removes chronic muscle tension and attempts to free up the joints. It performs the function of maintaining joint mobility, normally a function of exercise, where exercise is impractical.

The basic lesion areas should receive careful attention, particularly the weight-bearing joints. The feet and hips and the sacroiliac, lumbosacral, dorsolumbar, cervicodorsal, and atlanto-occiput junctions—these constitute the basic lesion areas. The majority of mechanical disturbances will be found at one or more of these points. Lesions in one area directly influence basic areas above and below, because contiguous muscles knit them together. In the spine those areas where the anatomical construction is changed are the weak links and are liable to be subjected to undue stress. Spinal curves either originate, cross over, or end at these approximate intervals. Their importance in treatment is unquestionable. For instance, it is common knowledge that an occipital lesion may be corrected much more readily if a related upper thoracic lesion is removed first.

Reactions.—

The patient's reaction to treatment should be carefully studied, since an adverse effect may delay recovery. Also, and more important, it may cause considerable mental anguish and concern about his ability to recover. Reactions to treatment vary in type and length. Most reactions occur within 12 to 24 hours. However, some delayed effects may take place 24 to 48 hours after treatment. The type of reaction may vary from mild fatigue to exhaustion, from relaxation and relief of pain to restlessness and aggravation of pain.

The usual reaction is that of fatigue and muscular soreness, which may last from 12 to 24 hours. The degree of disturbance is related to the amount of soft tissue irritation present and the extent of treatment given. Soft tissue technics are more apt to produce muscular soreness than articulatory or corrective procedures. The reaction of the patient is often influenced by his underlying problem, his state of well-being, whether he is rested, upset nervously, et cetera. It is sometimes bewildering to the novice to find that what is apparently the same type and length of treatment may produce entirely different results in the same individual at different times. Adverse reactions cannot always be blamed on the treatment, for sometimes a patient leaves the office to do a day's shopping.

Manipulative treatment may be enough to tip the balance in some sensitive individuals and produce varied autonomic nervous system reactions. The cases of extreme exhaustion or of headache and related gastrointestinal distress following treatment are usually found in those patients who were under emotional tension.

It is often difficult to work out the optimum dose of treatment for a particular patient. The reactions to treatment are apt to be most prominent after the first or second visit. In the elderly patient arthritis is often a complication. In such patients judicious care must be exercised in ascertaining the proper amount of therapy and the proper spacing for maximum results. A reaction which does not last longer than 24 hours, if it is followed by an amelioration of symptoms, is justified in these cases. Caution must be used where the reaction lasts longer. A re-evaluation of the patient and of the method of treatment is indicated when an adverse result occurs. The reaction of the patient is the most important consideration in deciding the type, length, and spacing of treatments. Rest following treatment and the use of analgesics and heat are important adjunctive measures to help allay adverse effects associated with manipulative therapy.

Manipulative treatment alone is not the answer for the elderly patient's problems. More often it is the physician's interest in him that stirs the patient's mind and reawakens his interest in life. The will to live is in proportion to the interest in life. The patient needs encouragement and understanding. Friendship from the physician is desired in all its meaning. The patient who is confined to bed should be encouraged to become ambulatory as soon as possible.

Many times the patient will do more under the guidance of the physician than he will for the family. Like youth, the aged have a strong desire for independence. Further, they are concerned about being a burden to friends or family. Reassurance is needed to combat insecurity and loneliness. Talk to your elderly patient and encourage him to talk to you. And keep your aged patient ambulatory if you want to keep your aged patient alive.

CONCLUSIONS

In general, manipulative therapy is kinesiologic. It strives to restore normalcy in the functions of muscle and joints. It aids the normal exchanges of tissue fluids and assist venous and lymphatic flow. Furthermore, it is relaxing. At times it has a euphoric effect as well as a sedative action. Properly administered, manipulative therapy contributes to the well-being of the patient. These results are an assurance that osteopathic manipulative treatment is beneficial to the aging patient.

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REFERENCES

1. Le Comte du Noüy, P.: Biological time. MacMillan Co., New York, 1937.

2. Crampton, C.: Start today: your guide to physical fitness. A. S. Barnes & Co., New York, 1941.

3. Worcester, A.: Care of the aged, the dying, and the dead. Ed. 2. Charles C Thomas, Springfield, Ill., 1940.

4. Mennell, J.: Science and art of joint manipulation. Vol. I: Extremities. Ed. 2. J. & A. Churchill, London, 1949.

Ewing's Sarcoma*

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INTRODUCTION

In 1921, Ewing described the tumor which now bears his name and called it endothelial myeloma. It is also known as diffuse endothelioma. Lücke[1] first recognized this tumor in 1866. The term endothelioma was introduced in 1889 by Golgi, who applied the term to a large group of poorly understood tumors whose cellular composition appeared to be endothelial in character.[2]

Two groups of tumors stem from the bone marrow according to Luck.[2] From the marrow blood cells and their progenitors stems the myeloma series, such as multiple myeloma; and from the supporting structures of the marrow, the reticuloendothelial tissues, stem three tumors—Ewing's tumor, reticulum cell sarcoma, and hemangioendothelioma. Conner, in 1926, classified the reticuloendothelial marrow tumors into three types: (1) angioendothelioma, (2) reticulum cell sarcoma, and (3) diffuse endothelioma (Ewing's sarcoma). Ewing did not believe that the reticulum cell sarcoma was related to the endotheliomas, but Oberling's theory is that Ewing's tumor and the reticulum cell sarcoma are variants of the same tumor and that both originate from reticulum cells. Stout, Jaffe, Lichtenstein, Weinmann, and Sicher share this view. Oberling further states the belief that the reticulum cell is also the ancestral cell for lymphocytes, plasma cells, myelocytes, and erythroblasts.[2]

In spite of all of the cases that have been recorded and the amount of work that has been done in relation to Ewing's sarcoma, it remains a controversial subject in the field of bone tumors. This is not too surprising inasmuch as there is as yet no unanimity of opinion about the classification of the neoplasms of more or less undifferentiated round cells. Positive identification of Ewing's tumor from biopsy specimens alone is particularly difficult since the tissue is prone to undergo degeneration, with resultant distortion of the cytologic details, necrosis, and secondary leukocytic reaction. This confusion is compounded by the susceptibility of the tumor tissue to radiation. Often routine diagnostic exposures will affect the cytology, making identification even more difficult.

The clinical picture is also confusing. Many early writers on the subject spoke of the typical roentgenologic features of onion-peel proliferation. That this is not commonly seen is borne out by a review of literature. Other laboratory findings, such as elevated sedimentation rate and leukocytosis, and even the clinical feature of low-grade fever which have been reported as characteristic are not necessarily common features. When these features are found, they usually indicate only a more rapid termination of the case. That clinically the tumor has to be differentiated from the low-grade infections such as tuberculosis is borne out by the fact that early sections have revealed only inflammatory tissue without any suggestions of tumor. However, later in the course of the disease, unquestionable microscopic confirmation of the presence of endothelioma has been found, which brings us to the theories of etiology. Certainly with such a background, either trauma or infection, possibly from a virus, could be considered as being the etiologic agent.

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Ewing's sarcoma does not produce either cartilage or bone. Where new bone is found in relation to this tumor, it is reactive bone rather than tumor bone. It is indistinguishable from healing or inflammatory bone and is due to reparative effort of the bone-forming elements. Degenerating bone surrounded by tumor cells represents destruction of the normal architecture of the cortical lamellae. These processes occurring simultaneously give rise to the so-called characteristic roentgenologic appearance of Ewing's sarcoma and also account for the erroneous impression that this tumor produces bone.

The clinician can hardly be expected to be interested in the subtleties of the variants of the round cell tumor microscopically or with theoretical considerations of its histogenesis. His concern is with diagnosis and management. Therefore, this paper will be primarily concerned with clinical features of the condition.

AGE AND SEX INCIDENCE

Ewing's sarcoma is most commonly observed in adolescents or young adults between the ages of 10 and 25 years, although there are exceptions where a younger child or an older adult may be involved. Using the age factor in differential diagnosis one should bear in mind that in young children, particularly, neuroblastoma is a strong possibility, and in adults in their third and fourth decade, a metastatic carcinoma must always be suspected. Beyond the fifth decade, multiple myeloma becomes a major possibility which must be considered when dealing with this type of tumor. The incidence of Ewing's sarcoma in males is approximately twice that seen in females.

DISTRIBUTION

Usually in the beginning, only a single skeletal lesion is recognized clinically or demonstrated roentgenologically. In an occasional case, however, x-rays may reveal additional so-called clinically silent foci of bone involvement or even, possibly, pulmonary metastases. Morton lists the distribution of 190 Ewing's sarcomas as follows:[3]

Lower Extremities	Cases
Tibia	39
Femur	38
Fibula	16
Foot—small bones	7
Patella	1
	101
Upper Extremities	
Humerus	19
Clavicle	8
Scapula	7
Radius	5
Ulna	4
	43
Axial Skeleton	
Pelvis	25
Ribs	13
Spine	6
Skull	1
Jaw	1
	46

Lichtenstein[4] states:

In so far as the limb bones are concerned, it is usually the shaft rather than the end of the bone that is affected. Also, while the large bones are often involved (the femur, tibia, and humerus particularly) it is rather surprising how often the fibula is the site of the presenting tumor.

SYMPTOMS

Pain apparently is the one outstanding consistent complaint; it is usually of some weeks' or a month's standing before the patient confronts the physician with the problem. Most patients are prone to relate any syndrome to trauma, and such is the case here, but rarely does one find trauma specifically related to the actual onset of the complaint. The pain is localized, throbbing in character, and more severe at night. Listening to the patient's description of the pain, one is impressed with its similarity to the throbbing type of pain so commonly seen with a chronic, low-grade abscess. The pain is usually progressive, and with it the patient will often call attention to localized swelling, the second most consistent complaint. Tenderness when pressure is applied to the swollen area is found in practically all cases. Frequently, the subcutaneous veins overlying the lesion are prominent. Local heat, usually found in low-grade infection, is more commonly absent, even though the patient may state that the area feels somewhat warm.

PHYSICAL FINDINGS

Physical examination of the patient usually reveals a mass that is somewhat firm, slightly tender, with the superficial veins overlying the area somewhat dilated. Finding the tumor mass only serves to emphasize the strong tendency of Ewing's sarcoma to break through the cortex of the bone and spread into the surrounding soft tissues. The patient often walks with a limp when the lesion is located in the lower extremity.

ROENTGENOGRAPHIC FINDINGS

Diagnosis by x-ray examination alone is impossible in my opinion. If the lesion is still small, the picture is more often misconstrued as that of an inflammatory lesion. If the tumor lesion is expanded enough to suggest a malignant tumor, it is then more commonly misinterpreted as some other malignant tumor. The only fairly consistent finding on x-ray is that of destruction or lysis of bone. In some cases, the lesion may appear merely as a small zone of mottled rarefaction reflecting destruction of the spongiosa and, to a lesser degree, of the overlying cortex, associated with only a trace of periosteal reaction in the formation of new bone. This picture is suggestive of an inflammatory lesion such as a pyogenic or tuberculous osteomyelitis rather than a tumor. However, within a month or two, there is evidence of rapid extension of the pathologic area within and beyond the bone itself.

It cannot be emphasized too much that in the beginning the roentgenogram reveals only a relatively small area of bone destruction and that this cannot be taken to indicate the actual extent of the involvement of bone marrow spaces, which may already be riddled by neoplastic tissue. As the tumor progresses, the x-ray may reveal some expansion, but this is not pronounced. It appears to be irregularly rarefied and mottled from the presence of smaller or larger foci of relative radiolucency and shows the destruction of the cortical outline over a variable distance. Reactive deposition of new bone by the periosteum, where the neoplastic tissue is penetrating the cortex, is very conspicuous. If the so-called typical onion-peel appearance is sought on x-rays, the diagnosis will be missed in many cases. Even if it is present, it is not necessarily indicative of Ewing's sarcoma. In summarization of the x-ray findings, then, it can be said that Ewing's sarcoma is often

mistaken for inflammatory lesions in the beginning and in the later stages for other malignant tumors.

LABORATORY FINDINGS

Other common laboratory findings are leukocytosis and an increased sedimentation rate. The serum alkaline phosphatase is frequently slightly elevated. As stated before, when the sedimentation rate is increased and the leukocytosis and low-grade fever also are present, the probability of a rapid fatal termination is much greater.

GROSS PATHOLOGY

The extraosseous tumor mass is soft and friable, and the greater part of it is light gray. The reddish and dark brown areas that are present appear similar to placental tissue and represent sites of hemorrhage and necrosis. Hemorrhage is quite common within the tumor itself, as the vascularity is generally pronounced. Small pseudocysts are not infrequently seen where the necrotic tissue has liquefied. Multiple fibrous bands crisscross the tumor mass. In the majority of cases, the extracortical mass represents the largest portion of the tumor.

MICROSCOPIC PATHOLOGY

In a well-stained section, the cells that make up Ewing's tumor are as uniform as the cells in the osteogenic sarcoma are varied. However, secondary changes may obscure these findings or make it difficult to demonstrate them in an individual biopsy specimen. There may be large fields in which the tumor cells have been altered by degeneration and necrosis or by hemorrhage and reparative reaction to it. There may even be areas in which reactive, inflammatory changes dominate the picture. Degeneration causes the nuclei to appear small and pyknotic and such nuclei are likely to be surrounded by a narrow zone of cytoplasm with a delimiting cell border. Also, the areas in which the cells have undergone necrosis may be heavily infiltrated with polymorphonuclear leukocytes.

The neoplastic tissue examined will reveal that many of the vessels are collared by tumor cells. However, the vessel spaces are not lined with tumor cells. Tumor cells arranged circularly in a so-called rosette are characteristic. However, it can generally be seen that the centers of these formations represent degenerative cells with shadows which are still perceptible rather than fibular or granular cores as are seen in neuroblastoma. A few mitotic figures are seen even in the crowded areas which give the cells their polyhedral appearance. Campbell and Hamilton[5] utilized the number of mitotic figures ("chromatin knots") in each high power field as a basis for establishing the prognosis. Cases were graded from one to four. A count of five or less mitotic figures per high grade field was classified as grade one. Grade two had six to ten mitotic figures, grade three, eleven to fifteen, and grade four, more than fifteen. Experience indicated that patients in grade one had a 31 per cent chance of living 5 years and a 23 per cent chance of living 10 years and that patients in grades three and four probably would not survive much longer than a year.

TREATMENT AND PROGNOSIS

In spite of the classification by Campbell and Hamilton and the utilization of the increased sedimentation rate, leukocytosis, and low-grade fever as prognostic features, treatment remains confused. It has been demonstrated repeatedly that adequate x-ray therapy may bring about remarkable amelioration of complaints referable to the tumor site. However, at autopsy these patients usually manifest wide skeletal metastases as well as visceral extension, notably to the lungs. On the other hand, surgical excision, even where possible, offers little more hope to the patient or the family. Lichtenstein[4] states:

> In the 17 cases covered by this survey, there was not a single cure, even in those cases in which surgery was resorted to promptly after the diagnosis was established, and all but 3 patients were dead within 3 years of the onset of symptoms. Otherwise, I have personal knowledge of only a single cure, in a patient who is known to be alive and well 20 years after amputation of a lower limb for a tumor of the fibula, diagnosed as Ewing's sarcoma (I have reviewed the biopsy slide and am willing to accept the tumor in question as Ewing's tumor).

As of 1935, The Registry of Bone Sarcoma reported that 10 patients of some 126 registered cases of Ewing's sarcoma, all of them surgically treated, had survived from 5 to 21 years following treatment.[4] All of these statistics offer some encouragement, but one must recall that the diagnoses were made by different observers and that some of them may have been mistaken. At least some of these tumors in question may have represented primary reticulum cell sarcomas still limited to a single bone marrow focus.

Under the circumstances, with such a grave prognosis, one could recommend biopsy for positive identification, followed by surgical extirpation whenever possible. Intensive x-ray irradiation after the biopsy has been performed could also be utilized. However, in my opinion, one should not rely upon irradiation alone. Although Ewing's sarcoma is regarded as a multicentric tumor, tending to spread over the entire skeletal and visceral components, there may very well be occasional cases in which the neoplastic process is more or less limited to a single bone. This, of course, would account for the few cures that have been observed and offer some hope for the patient.

PRESENTATION OF A CASE

A 23-year-old white woman presented herself with pain and swelling in the right ankle.

History.—The onset occurred in November, 1952, with pain and a "lump," which the patient noticed first in the middle of the night. Some 24 hours later the pain had subsided, but it returned periodically, each attack lasting about the same length of time. When first seen the patient had had constant swelling in the area for the last 8 weeks, the pain had been continuous during the preceding 6 days, and there was some difficulty in walking. There was no known injury, no previous trouble in the area, and no other joints were involved. There had been no night sweats or weight loss. However, the patient did state that she had been quite tired most of the time during the past 6 months. She had been working approximately 14 hours a day some 2 or 3 months previously, but even though she had stopped working the long hours, she still had fatigue. A temperature chart, taken by her at the request of her family doctor over the previous few days, revealed an average in the evening of about 99.2 F., or about a 1-degree rise as compared with her morning temperature. She had not had tuberculosis or diabetes. She had pneumonia at the age of 6, with empyema which was drained surgically about seven times. She had pneumonia again at the age of 8 and at the age of 11. She had had no cardiac disorders and no surgery other than the chest surgery mentioned.

Examination.—Examination revealed a well-nourished slender Caucasian female who appeared near her given age of 23 years. The right ankle presented a moderately swollen appearance. The swelling was firm

and somewhat doughy. The area was not hot and inflamed as it would have been in an acute infection due to staphylococci or other such organisms. The findings were almost the classic findings of tumor alba. There was a fair range of motion of the ankle joint, although the swelling was quite tender, especially over the lateral superior fibular area. There was an old scar on the left chest in the midline and also one in the posteroinferior area. No other gross abnormalities were noted in the examination. Anteroposterior and lateral x-rays, taken by the referring doctor and brought in by the patient, revealed some soft tissue swelling in the posterior ankle area about 1 handbreadth proximal to the distal end of the fibula (Fig. 1). Some irregular roughening of the medial aspect of the fibula in that area was also observed. The ankle joint itself did not seem to be involved.

Fig. 1

Diagnosis.—Diagnosis was (1) probable tuberculous tenosynovitis and (2) possible neoplasm.

Using aseptic technic with local infiltration of 1 per cent procaine as anesthesia, an attempt was made to aspirate material from the area. About 0.5 cc. of liquid was successfully aspirated, in which there was white, granular, cheesy material. Apparently there was not enough liquid present to permit adequate aspiration.

The patient was placed in a circular plaster cast from the tibial tubercles to the toes, with the dorsum of the toes uncovered and the ankle in neutral position, while awaiting further laboratory work. The results of blood Kahn and Mazzini tests were negative, as was that of the urinalysis. The hemoglobin was 68 per cent, and the erythrocyte count was 3,940,000 with a color index of 0.88. A very slight hypochromia was noted, with possibly a very slight polychromasia. An occasional poikilocyte was seen. The total leukocyte count was 7,800. On a differential count, the total neutrophil count was 70, with 66 segmented and 4 stab cells. The lymphocytes totaled 28, and 2 monocytes were seen. The sedimentation rate was 22 mm. in 60 minutes.

The results of direct smear and cultural examination of the aspirated material were negative for acid fast bacilli. Examination of a gram stained smear from aspiration performed on August 12 revealed many pus cells, a moderate number of gram negative diplococci, a few gram positive cocci, and diplococci. No acid fast bacilli were seen. On culture, gram negative diplococci were found that culturally and morphologically resembled Neisseria sicca.

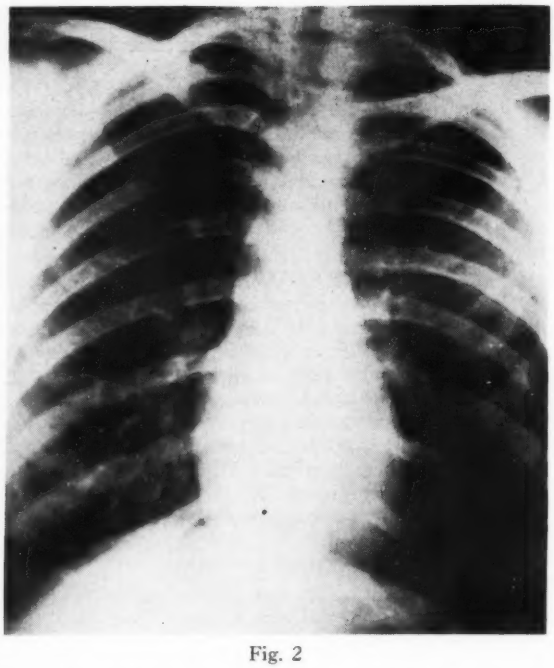


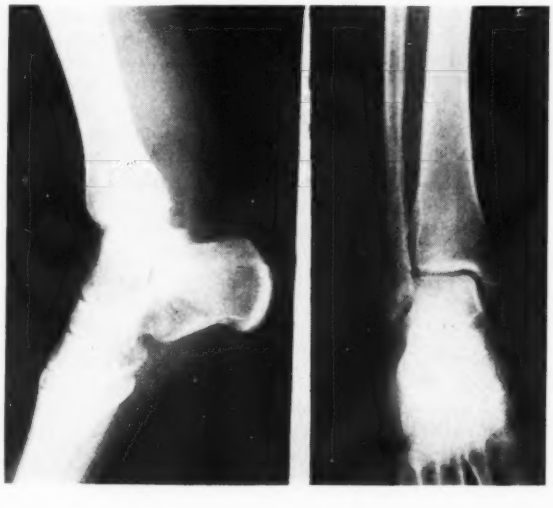
Fig. 2

A chest x-ray examination on August 8 was thought by the roentgenologist to show pathology similar to that in the ankle, primarily because of the spindle-shaped enlargement of the left third rib (Fig. 2). However, with the past history, this could easily be due to the old thoracotomy.

On August 21, 1953, the cast was removed, and again the area was aspirated. This time bright red blood was removed, about 30 cc., which appeared to be under considerable pressure. Smears and cultures were repeated and examination was made with Papanicolaou stain. Anteroposterior and lateral x-rays of the ankle revealed further destruction of the fibula (Fig. 3).

On August 24, further study of the dry films and all information, such as the laboratory work and radiographic metastatic survey, changed the diagnosis to a probable Ewing's sarcoma. This was discussed with

Fig. 3



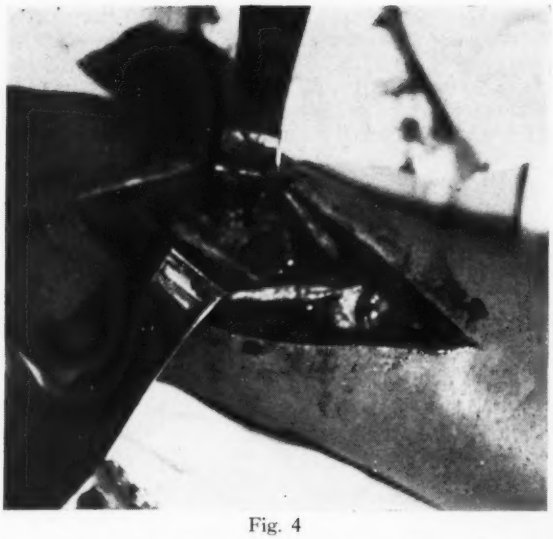


Fig. 4

the patient, who was admitted to the hospital for a biopsy with the understanding that if it proved positive, amputation would be the procedure of choice.

On August 31, through a 6-inch lateral fibular incision, an egg sized tumor mass was noted. The central degenerated portion resembled placental tissue. It was well infiltrated into the soft tissues and was quite vascular (Fig. 4). The biopsy specimen (Fig. 5) was pronounced sarcomatous by the pathologist. Therefore an amputation was performed. Following the amputation the tumor was dissected free, revealing the area of involvement of the fibula with the large tumor mass (Fig. 6). Further sections taken at that time proved the tumor to be Ewing's sarcoma (Fig. 7).

Pathologist's Findings.—

Dr. W. Harriett Davis reported the following: On August 31 after examination of a frozen section of the

Fig. 5

tumor mass, a right mid-thigh amputation was done. Most of the soft tissues were resected from the tibia and the fibula and the upper thirds of these bones were removed. This dissection exposed a primary tumor mass which was seen as an ovoid, lobulated, firm tissue mass overlying the lateral aspect of the distal third of the fibula. It had replaced some of the soft tissue and appeared to have a pseudocapsule. A recent surgical incision adjacent to the points of invasion of the fibula showed clotted blood and ragged margins of the tumor. Portions of the tumor could be seen arising between the tibia and the fibula. The entire mass measured approxi-

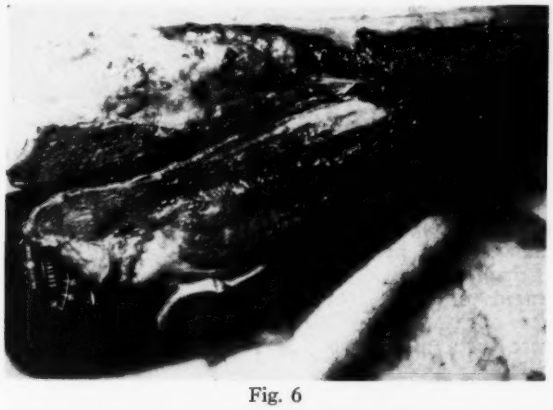


Fig. 6

Fig. 7

mately 11 by 7 by 4½ cm. The cut surface displayed fairly homogeneous, firm, gray-white tumor tissue interspersed with irregular zones of necrosis and scant hemorrhage. The moth-eaten appearance of the cortex of the fibula was the result of invasion as seen in the medullary cavity, which though not particularly widened, contained a similar type of tumor tissue.

Microscopic examination of sections from the main tumor showed extensive trabeculae of tumor cells

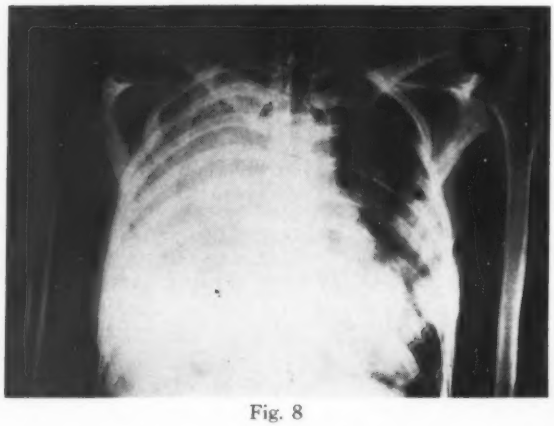


Fig. 8

which in most instances were similar in size and contour. The cytoplasm was seldom visible and when seen was poorly demarcated. Nuclei were round to ovoid and darkly pigmented; nucleoli were seldom identified. Mitoses were not frequent. The tumor was not remarkably vascular, but in some instances vessels appeared to be lined by tumor cells. Tumor thrombi were not encountered. Frequent areas of degeneration were seen, and there was some recent hemorrhage (Fig. 7).

Progress.—The patient developed some pain following the amputation, but none in the extremity referable to a tumor mass. Since it was felt by the operating surgeon that this was a definite phantom pain she was given procaine nerve blocks which relieved the pain. Repeated x-rays of the stump and other skeletal surveys failed to reveal metastases.

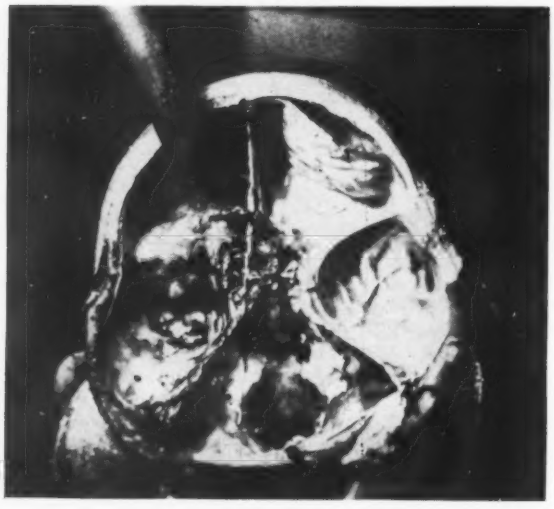
On February 3, 1954, the sedimentation rate was elevated to 50 mm. in 60 minutes. On February 16 the patient started complaining of left-sided headaches and some aching in the neck. She stated this had been present for approximately 2 weeks. Skull x-rays taken at that time, together with lateral and anteroposterior views of the cervical areas, were negative for osseous involvement. She was referred to an otorhinolaryngologist for examination because of left visual difficulty. He thought that metastases were present but was not certain and therefore requested the patient to return in a few days for further evaluation. When the patient returned in 2 days, she was totally blind in the left eye. From that time on, the course was progressively downhill. The swelling in the left eye became pronounced until there was a unilateral, gross exophthalmus. The patient was then hospitalized, and chest x-rays revealed progressive involvement of the lung field (Fig. 8).

The patient expired on May 18, 1954.

Autopsy Findings.—

Dr. Julian J. Gonzales reported the following: Anatomic summary: The body was that of a pallid, cachectic, young Caucasian female exhibiting marked left exophthalmus and periocular discoloration. The right lower extremity had been amputated above the knee. No edema or other external diagnostic features were observed. No fracture, erosion, or softening of skull surfaces was noted. There was meningeal pallor and a moderate flattening of the cerebral convolutions.

Fig. 9



A circumscribed, soft, friable, pale, grayish pink neoplasm lay within the interior surface of the left frontal lobe (Fig. 9). It measured 4 cm. in diameter and extended into and eroded the bony table of the left anterior cranial fossa. The sella turcica was particularly eroded, but the pituitary appeared to be uninvolved. No sign of hemorrhage or abscess was noted. There was extensive invasion in the left retrobulbar space and paranasal sinuses. The brain weighed 1220 grams.

Fig. 10

The mediastinal structures in both lungs were filled with dirty gray, soft, necrotic, neoplastic tissue (Fig. 10). It was impossible to remove the lungs without fragmentation because they were so extensively bound to the parietal pleura. Section revealed circumscribed, soft, grayish-green, necrotic masses of variable size distributed through every region of the lung. The lungs weighed 1820 grams. The heart was small and grossly free of metastatic involvement. The myocardium was a homogeneous, light chocolate brown and displayed no signs of infarction. The valves were of normal diameter and were free of scarring, vegetation, or de-

formity. The coronary vessels were soft and free of occlusion by plaque or thrombus. A few scattered, soft intimal plaques were present through the proximal segment of the aortic arch. The heart weighed 200 grams.

The abdomen was free of fluid. The mesenteries and omentum were devoid of fat. No evidence of neoplasm obstruction or ulceration was present in the gastrointestinal tract. Numerous hard fecal masses lay within the lumen of the large bowel. The liver was dark chocolate brown, smooth, and displayed chronic passive congestion. Metastatic neoplasm was not observed. No abnormality of the gallbladder or bile ducts was encountered. The liver weighed 1000 grams. The spleen was small, weighing but 80 grams. It was soft, and its cut surface was congested, though of relatively normal appearance. The pancreas was small, weighing 40 grams, and its cut surface was dark grayish-tan with normal architecture.

The kidneys were small, smooth surfaced, and displayed no corticomedullary, calyceal, pelvic, or ureteral abnormality. Each kidney weighed 120 grams. The uterus was small, of normal contour, and weighed 60 grams. No sign of malignant degeneration was detected. The adnexa were in normal relationship to the uterus and displayed no gross abnormality. The thyroid gland was soft, symmetrical, and weighed 12 grams. The adrenals were of the usual contour, soft, and free of neoplasm. They weighed 17 grams.

Dr. Francis J. Buck reported as follows: Sections of the neoplasm were prepared for microscopic examination from various metastatic sites including cranial bone, pituitary, retrobulbar tissue, lung, and brain. The tumor was similar in appearance in all areas. It was composed of closely packed sheets of small, round or ovoid, deeply basophilic, polymorphic cells. These exhibited numerous abnormal mitoses; areas of necrosis and hemorrhage were common. The sheets of tumor cells were separated and supported by loosely woven perivascular connective tissue partitions. The histologic appearance of the tumor was typical of Ewing's sarcoma. Sections of liver, adrenals, spleen, kidneys, pancreas, heart, and ovaries exhibited no significant pathology.

The death certificate listed the immediate cause of death as inanition and debilitation, caused by sarcomatosis due to Ewing's sarcoma, for which amputation had been performed. Intracranial metastases were also present.

SUMMARY AND CONCLUSIONS

A review of Ewing's sarcoma and a report of a case with the common findings of localized pain, swelling, and tenderness, low-grade fever, leukocytosis, and increased sedimentation rate in a 23-year-old woman have been presented.

Diagnostically, Ewing's sarcoma is often confused with a chronic abscess early in the disease process and with other neoplasms as the disease progresses.

Prognosis is poor in spite of surgery or radiation or both. However, if the lesion is accessible, amputation and radiation offer the only hope for survival.

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Acknowledgment

I am deeply indebted to L. J. Ginsburg, D.O., of Los Angeles for the photomicrography.

REFERENCES

1. Lücke: Cited by Coley, B. L.: Neoplasms of bones and related conditions. Paul B. Hoeber, New York, 1949.

2. Luck, J. V.: Bone and joint diseases. Charles C Thomas, Springfield, Ill., 1950.

3. Morton, J. J.: Treatment of Ewing's Sarcoma of bone. In Treatment of cancer and allied diseases, edited by G. T. Pack and E. M. Livingston. Paul B. Hoeber, New York, 1940, vol. 3, pp. 2422-2436.

4. Lichtenstein, L.: Bone tumors. C. V. Mosby Co., St. Louis, 1952.

5. Campbell, W. C., and Hamilton, J. F.: Gradation of Ewing's tumor (endothelial myeloma). J. Bone & Joint Surg. 23:869-876, Oct. 1941.

WORDS

Though every patient is a test subject and every operation, treatment, regimen, or program is, in the strict sense, an experiment, do not use the word experiment in front of patients and never mention human guinea pigs. Language, the really marvelous development and developer of man's brain, is the hardest tool to use well, the hardest technique to master. In our transactions especially with patients and as models for our students, we should study at all times how we may improve our mutual understanding by the use of language. Words are subtle, slippery, changing chameleons, leaving our lips with one intent, heard with a different meaning or implication, misunderstood, or falsely emphasized. Out of context they may be frightening. They may be clutched at as straws of hope or rejected as messengers of evil. They are sources of anguish when they are interpreted as a sentence of death or invalidism. The long words we may let slip are a great annoyance and frustration to the unsophisticated or even the sophisticated patient. Translate into common terms that a child can understand. Avoid all terror words such as cancer, pernicious, and malignant. Avoid the long and technical words if they are unfamiliar. The patient may be able to take "electrocardiogram" in stride but he may be completely bewildered by "dyspnea." In talking to patients, and especially about patients, avoid the good zoological labels of "male" and "female," accurate though they be. It is just as easy to say man or woman, girl or boy. It avoids the implication of the patient's being a specimen or subject of experiment. At the same time, it removes the subtle, but very real implication, of intellectual or social superiority. We don't refer to our own children as three-year old white males, we call them little boys (or holy devils). Few of us would introduce our mother or Aunt Maggie from Dubuque as a charming fifty, sixty, or seventy-year old white female. This crude usage is an example of the shocking depersonalization in medicine, so subtle that physicians rarely recognize it and rarely think about it. Patients resent it, though, in their quiet acceptance, they say little.—William B. Bean, M.D., *Journal of the Student American Medical Association*, June, 1956.

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Histamine. I: A Historical Summary of the Biodynamics of Histamine Liberation

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Histidine was discovered simultaneously by Hedin and Kossel in 1896.[1] The chemistry of many of the amino acids was considered old before it was discovered. Histidine is beta-4-imidazole-alpha-amino propionic acid. It contains one amino group in the side chain and one imino group in the ring. It contains one asymmetric carbon atom and is likewise optically active, existing as both D-histidine and L-histidine. It is one of the amino acids that is a strong base, the other two being arginine and lysine. These three amino acids constitute the so-called hexone bases that are foundation material in protein structure. Histidine is considered one of the indispensable amino acids and is present in many of the proteins found in the human body—plasma proteins, anserine, carnosine, ergothioneine, the cytochromes, hemoglobin, et cetera. It has been found to be essential to growth and development in the young and to body maintenance in the adult. In all cases only one form, the L-form, is utilized by the body. Histidine is subject to a continuous process of successive deaminations and aminations involving the alpha-amino group. Histidine has been predicated as a precursor of glutamic acid, creatine, and arginine, though there is strong opposition to this idea today.[2]

In 1910 Ackermann[3] observed that histidine was converted to histamine by bacterial putrefaction. Histamine had been isolated from ergot by Barger and Dale[4] a few months prior to this observation. Almost simultaneously Dale and Laidlaw[5] pointed out that the effects of histamine and the manifestations of anaphylactic shock had many points in common. A great many papers dealing with histamine versus anaphylaxis appeared between 1911 and 1920. In the early 1940's Dragstedt[6] and Feldberg[7] summarized the literature dealing with the mechanisms of anaphylactic shock and the allergic reaction; in these summaries the conclusion is reached that the liberation in the tissues of heparin, histamine, and possibly choline can account for all the prominent symptoms observed.

Beginning in 1918 Koessler and Hanke[8] published papers in which they estimated that Escherichia coli in the gastrointestinal tract of man maintained constantly from 6 to 20 mg. of histamine. A little later, in 1924, these same men established that the daily urinary excretion of imidazole complexes, or partial histamines, amounted to 120 to 220 mg.[9] In 1930 Kauffmann and Engel[10] estimated the daily urinary excretion of imidazole complexes as 150 to 600 mg. Incidentally, Koessler and Hanke[9] also reported the lowest values in cases of nephritis and the highest values in cases of liver disease.

While Koessler and Hanke were engaged in making the above mentioned study, Koch, Luckhardt, and Keeton[11] had made an active preparation from the pyloric mucosa of the cat and concluded that the preparation contained histamine, or at least the same ring structure as histamine. Edkins[12] had raised this question when he described a chemical stimulator of gastric secretion. He obtained the substance used from pyloric mucosa and referred to it at first as a "specific secretagogue," but later it was referred to as "gastric secretion"[13] or "gastrin." Edkins made his contribution around 1906 and started the investigation of the part played by histamine in gastric secretion. Keeton and Koch[14] in 1915 showed that the mucosa of the duodenum also produced gastrin.

About 1920 Popielski[15] learned that subcutaneous injection of traces of histamine stimulated a copious flow of gastric juice. Ivy[16] working with Kim isolated histamine as the picrate from a hydrochloric acid extract of pyloric mucosa.

Just a few years previously Ivy and Javois studied the effects of several amino acids[17] as well as several primary amines[18] for histamine activity. These men reported that several substances studied by them are potent secretagogues with a high degree of specificity. As an example, they found beta-alanine, one of the amino acids, to be a powerful excitant while its alpha isomer they found to be a very feeble excitant. During the 1920's and early 1930's it seemed that Koch, Luckhardt, and Keeton[11] and Kim and Ivy[19] had proved that gastrin and histamine were one and the same, but a few years later, Komarov[20] and Ivy[21] working separately each prepared histamine-free gastrin, and again the question became debatable.

This extended survey is intended to point out the conflicting ideas from which our present-day knowledge of histamine had its origin. But before passing to current ideas, there are still a few outstanding basic discoveries that should be mentioned. In 1931, Best and McHenry[22] isolated histaminase, an enzyme that destroys histamine by breaking the ring structure. This enzyme is present in abundance in the kidney, spleen, muscle, adrenals, blood, and intestinal mucosa. There seems to be little or no histamine in the lung, liver, or gastric mucosa. In 1930, Edlbacher and Kraus[23] isolated histidase from the liver. This enzyme breaks the ring structure of histidine. The broken ring structure can then apparently be used by the body to synthesize necessary constituents.

Animal tissues in general and the kidney and intestinal mucosa in particular produce a decarboxylase which removes the elements of carbon dioxide from histidine and thus converts it to histamine. This reaction apparently is the main source of pathologic histamine. In 1926, Abderhalden and Gebelein[24] succeeded in converting histidine into histamine by treating the former with diphenylamine. Thus it is possible that many similar chemical reactions may be a source of histamine. In 1949, Urbach[25] discovered that histamine

is partially detoxified by the formation of an acyl derivative, possibly in the liver, in which form it is supposed to be eliminated from the body. These last two observations lend credence to the possibility of a varied cycle of formation of histamine followed by detoxification. Leukotaxine may be a histamine liberator.[26] Thermal, mechanical, physical, and chemical injury may liberate histamine from the tissues.

In light of what has been written it is well at this point to annotate the various physiologic, pharmacodynamic, and biodynamic properties ascribed to histamine.

1. Administered orally, it is nontoxic.
2. Administered intravenously, it is highly toxic.
3. It is a vasodilator.
4. It may lower blood pressure to shock level.
5. It stimulates smooth muscle.
6. It promotes gastric secretion.
7. It acts directly on sensory nerve endings and may be a chemical mediator of pain, as acetylcholine and sympathin are chemical mediators in the autonomic nervous system.
8. It disturbs protein metabolism.
9. It may cause extreme capillary permeability with accompanying edema.
10. It tends to lower calcium in the serum and increase it in the liquid of hemolyzed erythrocytes. The potassium ion changes in the opposite way.
11. It is not destroyed by perfusion through liver slices.
12. Anaphylatoxin liberated by the sensitizing antibody, anaphylactin, in the hypersensitive individual may in many cases be histamine.
13. Histamine produces two of the three factors of inflammation.[27]
    a. It produces vascular capillarity.
    b. It increases capillary permeability.
    c. It does not produce migration of leukocytes to injured areas.
14. It lowers body temperature.
15. It decreases oxygen consumption.

From the above facts it would seem that histamine should be classed as the wonder chemical of the biologic world. It is relatively a simple, small molecule with the empiric formula $C_5H_9N_3$ and a molecular weight of 111. The basis for its potency must be related to its molecular configuration, that is, to its physicochemical properties. It must be truly an accelerator and an inhibitor in a strict chemical sense. To attempt to explain the reactivity in terms of chemical or metabolite antagonists would lead us far afield of the purpose of this paper. However, two statements which seem to be major postulates will be given: Histamine is a normal constituent of the human body,[28] but it is present in an inactive form, perhaps bound to certain amino acids within the cell. In the allergic reaction the cell is injured in an unknown manner by the union of antigen and antibody, and the histamine is set free.[29]

According to the second postulate, there are in the body certain normal histamine-receptor sites. There are certain substances which, if present in the body, are capable of occupying these sites which histamine would normally occupy, and for this reason no histamine effects can appear. We hereby refer to the so-called histaminolytic drugs. In this connection one of the Fourneau preparations, 929 F, used experimentally on animals injected with histamine, protects the animal from shock and prevents the action of histamine on smooth muscle, but it does not counteract the stimulation of gastric secretion in the same animal. If the compound were a direct antagonist of histamine in a chemical sense it should inhibit all the biologic activities of histamine. Much experimental evidence points to the fact that histamine antagonists may be only nonspecific inhibitors. Feinberg[30] rather plainly implies that such histaminolytics can give only temporary relief from allergenic conditions.

Partly in consideration of the above citations and partly as an outgrowth of our recent work in developing a quantitative method for the determination of serum histamine and then attempting to establish normal levels of serum histamine, we find that we are debating a great many questions. What is the source or origin of all histamine present in the serum? This question has been raised because the lowest values found in all sera used are from 2 to 5 micrograms per ml. How does the body dispose of histamine once it is formed? It has been mentioned that histamine is acylated in or by the liver preparatory to elimination from the body. But we question whether the acylation reaction ever goes to completion, which would thereby make it possible to complete removal of histamine. Or is it possible that the following equilibria are established: release or formation of histamine which would set up an equilibrium with free histamine, which in turn would be enzymatically acylated by the tissues, thereby setting up an equilibrium between free histamine and acylated histamine? If the latter is true, once the equilibrium is established the individual would not again be free from histamine. Then any interfering substance that would shift the equilibrium to the left would provide cause for allergenic manifestation. We wonder if sensitization is not the initiation of the above equilibrium and if subsequent contact with the allergenic material does not result in the shift to the left? If this is the case, how may we explain the familiar tendency toward hypersensitivity?

Let us consider again the concept that histamine is a normal constituent of the human body and that it is set free by injury to the cell brought about by the antigen-antibody reaction. How may histamine be released by this action? An antigen is any substance that when introduced into the body tissues produces an antibody, and it must in turn react with the antibody in some measurable way.[31] Thus an antigen is defined only in terms of antibodies produced, that is, antigenicity of a substance is a function of its ability to produce antibodies and is unrelated to its ability to produce disease or damage to tissues.[32]

Haptenes, or partial antigens, may couple with human sera to become antigenic. This might possibly be the type of antigen referred to in the above statement, and if there were no other inhibitions placed upon this type of reaction it might possibly release histamine. According to Landsteiner,[33] a haptene or partial antigen impresses upon its antibody a specificity which causes a combination of the antibody with its specific antigen. The process is apparently not a disintegration or a disproportionation, but the properties of antibodies indicate that they apparently consist of modified serum globulins, perhaps only the gamma globulins.

It seems likely that the antigen particle serves as a prosthetic group in the formation of biocatalysts that in turn determine the formation of units having essentially the electrostatic pattern of the antigen in their

exposed surfaces. This process of synthesis, or folding, or unwinding, or whatever it may be that results in altered structure, currently is thought to be the result of covalent bond formation, van der Waal forces of attraction and repulsion, oscillating dipoles, and the like, all of which are well understood by the chemist and physicist, and perhaps the process does not result in any type of molecular disintegration. In fact, it is quite well known that the entire protein molecule takes part in the antigen-antibody reaction. Even in Ehrlich's postulated receptors there is little to indicate the possible fragmentation of molecules that would release histamine. In addition, the specific "mold or die" once set up by an antigen perhaps functions continuously. A most convincing evidence that the antigen-antibody reaction occurs in toto is that the reaction is an adsorption phenomenon and follows Freundlich's adsorption isotherms very closely. But the antigen and antibody can be recovered from the precipitated or agglutinated material.

The peptide linkage has been definitely and universally proved and accepted as the major linkage in protein structure. Kossel[34] postulated that the nucleus of all proteins is composed largely of arginine, histidine, or lysine, or a combination of all three. All common proteins contain from 1 per cent to 8 per cent of histidine. Thirty years later Larmour[35] substantiated Kossel's work. Black[36] went a step in advance and established with fair accuracy that these three amino acids occur in a definite mathematical ratio in proteins, for example, in the respective order 12:1:4 in keratins. Bergmann[37] postulated a protein structure as being composed of rather small unit structures. These unit structures are then combined in definite aggregates and held together by secondary valencies to make the protein molecules. In such molecules the various amino acids occur at regular repeated intervals along the peptide chain.

Niemann[38] hydrolyzed hemoglobin and found from analysis of the hydrolysate that there should be a total of 576 amino acid groups in the chain. From this he derived that every eighteenth amino acid would be histidine, or about 8 per cent of the hemoglobin molecule is histidine. Carnosine, one of the muscle extractives, is composed solely of histidine and beta-alanine, and carnosine is hydrolyzed by an enzyme present in the liver, spleen, and kidney. Anserine, another muscle extractive, is composed solely of methyl histidine and beta-alanine. The red corpuscles contain from 10 to 25 mg. per 100 cc. of blood of a histidine derivative called ergothioneine. Cytochromes, the iron-bearing enzymes, contain histidine attached to the iron atom.

Histidine is definitely the precursor of histamine in the animal body. All major animal proteins contain histidine. Apparently the histidine residues are scattered in a regular pattern in numerical order along the protein chain. Since there are branched chains and many side chains in the protein molecule, it is conceivable that the histidine residues may often occur at the extremity of a branched chain or as a side-chain, from which position removal is easily possible without breaking the main protein chain, the forces and factors of removal, perhaps, being too numerous to mention. Hydrolysis of the peptide bond, or weakening of van der Waal forces, or a shifting of any of the physicochemical forces maintaining the protein structure, could release histidine or its residue, histamine. It is likely that no body protein is exempt from attack and that no entity is either too great or too small to initiate an attack.

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REFERENCES

1. Vickery, H. B., and Schmidt, C. L. A.: History of discovery of amino acids. Chem. Rev. 9:169-318, Oct. 1931.
2. Tesar, C., and Rittenberg, D.: Metabolism of L-histidine. Am. J. Physiol. 170:35-53, Sept. 1947.
3. Ackermann, D.: Ueber den bakteriellen Abbau des Histidins. Ztschr. f. physiol. Chem. 65:504-510, 1910.
4. Barger, G., and Dale, H. H.: Cited by Sexton, W. A.: Chemical constitution and biological activity. D. Van Nostrand Co., New York, 1949.
5. Dale, H. H., and Laidlaw, P. P.: Physiological action of B-iminazolylethylamine. J. Physiol. 41:318, 1910.
6. Dragstedt, C. A.: Anaphylaxis. Physiol. Rev. 21:563-587, Oct. 1941.
7. Feldberg, W.: Histamine and anaphylaxis. Ann. Rev. Physiol. 3:671-694, 1941.
8. Koessler, K. K., and Hanke, M. T.: Proteinogenous amines by decarboxylases of E. Coli. J. Am. Chem. Soc. 40:1716, 1918.
9. Koessler, K. K., and Hanke, M. T.: Studies on proteinogenous amines. XVI. Excretion of imidazoles in urine under special pathological conditions with special consideration of nephritis. J. Biol. Chem. 59: 803-834, April 1924.
10. Kauffmann, F., and Engel, R.: Uber Imidazolderivate im Harn Leberkranter. Ztschr. f. klin. Med. 114:405-431, 1930.
11. Koch, F. C., Luckhardt, A. B., and Keeton, R. W.: Gastrin studies. V. Chemical studies on gastrin bodies. Am. J. Physiol. 52:508-520, July 1, 1920.
12. Edkins, J. S.: Chemical mechanism of gastric secretion. J. Physiol. 34:133-114, March 13, 1906.
13. Still, E. U.: Secretin. Physiol. Rev. 11:328-357, July 1931.
14. Keeton, R. W., and Koch, F. C.: Distribution of gastrin in body. Am. J. Physiol. 37:481-504, June 1, 1915.
15. Popielski, L.: B-Imidazolyäthylamin und die Organextrakte. Erster Teil. B-Imidazolyläthylamin als mächtiger Erreger der Magendrüsen. Arch f. d. ges. Physiol. 178:214-236, 1920.
16. Ivy, A. C.: Role of hormones in digestion. Physiol. Rev. 11: 371-477, Oct. 1931.
17. Ivy, A. C., and Javois, A. J.: Contributions to physiology of gastric secretion. V. Stimulation of gastric secretion by amino acids. Am. J. Physiol. 71:591-603, Feb. 1925.
18. Ivy, A. C., and Javois, A. J.: Contributions to physiology of gastric secretion. VI. Stimulation of gastric secretion by amines and other substances. Am. J. Physiol. 71:604-620, Feb. 1925.
19. Kim, M. S., and Ivy, A. C.: On mode of action of secretagogues (liver extract) in promoting gastric secretion. Am. J. Physiol. 105:220-240, July 1933.
20. Komarov, S. A.: Gastrin. Proc. Soc. Exper. Biol. & Med. 38: 514-516, May 1938.
21. American Medical Association: Glandular physiology and therapy. J. B. Lippincott Co., Philadelphia, 1942.
22. Best, C. H., and McHenry, E. W.: Histamine. Physiol. Rev. 11:371-477, Oct. 1931.
23. Edlbacher, S., and Kraus, J.: Zur Kenntnis des intermediären Stoff wechsels des Histidins. Ztschr. physiol. Chem. 191:225-242, 1930.
24. Aberhalden, E., and Gebelein, F.: Proteinogenous amines by heating amino acid with diphenylamines. Ztschr. f. physiol. Chem. 152: 125, 1926.
25. Urbach, K. F.: Nature and probable origin of conjugated histamine excreted after ingestion of histamine. Proc. Soc. Exper. Biol. & Med. 70:146-152, Jan. 1949.
26. Menkin, V.: Röle of inflammation in immunity. Physiol. Rev. 18:366-418, July 1938.
27. Lewis, T.: Blood vessels of human skin and their responses. Shaw & Sons, London, 1927.
28. Grossman, M. I.: Gastrointestinal hormones. Physiol. Rev. 30: 33-90, Jan. 1950.
29. Ratner, B.: Allergy, anaphylaxis and immunotherapy. Williams & Wilkins Co., Baltimore, 1943.
30. Feinberg, S. M.: Histamine and antihistaminic agents; their experimental and therapeutic status. J. Am. M. A. 132:702-713, Nov. 23, 1946.
31. Schayer, R. W.: Biogenesis of histamine. J. Biol. Chem. 199: 245-250, Nov. 1952.
32. Boyd, W. C.: Fundamentals of immunology. Ed. 2. Interscience Publishers, New York, 1947.
33. Landsteiner, K.: Specificity of serological reactions. Rev. ed. Harvard University Press, Cambridge, Mass., 1945.
34. Kossel, A.: Protamine nucleus hypothesis. Ztschr. f. physiol. Chem. 22:176, 1896.
35. Larmour, R. K.: Cited in Outlines of biochemistry, edited by R. A. Gortner, Jr., and W. A. Gortner. Ed. 3. John Wiley & Sons, New York, 1949.
36. Block, R. J.: Cited in Outlines of biochemistry. *Op. cit.*, ref. 35.
37. Bergmann, M.: Bemarkungen über ungesättigte Dypeptidanhydride and über Dehydrierung von Aminosäurederivaten. Ztschr. f. physiol. Chem. 165:167-169, 1927.
38. Niemann, C.: Cited by Mitchell, P. H.: Textbook of biochemistry. Ed. 2. McGraw-Hill Book Co., New York, 1950.

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AN IMPORTANT UNDERTAKING

Many of our readers will be interested in a project just beginning—a committee of the American Osteopathic Association directed to study and review standard osteopathic nomenclature looking to its needed revision. Entitled Committee on Standard Nomenclature, it consists of six members as follows: Three representatives of the American Association of Osteopathic Colleges, two members of the A.O.A. Bureau of Professional Education and Colleges, and a representative from the Editorial Office of the A.O.A. The Committee's personnel currently is made up of Dr. W. Fraser Strachan, chairman, and Drs. Edgar O. Holden, J. S. Denslow, Myron C. Beal, Charles C. Dieudonne, and Raymond P. Keesecker.

Serving as consultants to the Committee are the chairmen of sections on osteopathic principles and technics or of allied departments in each of the osteopathic colleges. By the use of consultants Dr. Strachan hopes to have a complete representation from all official sections of osteopathic education. He hopes to have preliminary reports from the members of his Committee and from his consultants not later than September 1, 1956, in order that they may be reviewed prior to the first meeting of the Committee.

This important assignment made to so representative a group should do much toward securing a uniform descriptive nomenclature and bring to osteopathic terminology a logical classification which it does not now possess. The present standard nomenclature is that published in THE JOURNAL, January, 1936, under the signatures of the late Dr. H. V. Halladay and of the Committee on Standard Nomenclature of that period.

Dr. Strachan appeals for suggestions from JOURNAL readers, pointed to any of the problems connected with the current study. Communications should be sent directly to him at 1524 E. 53rd St., Chicago 15, Illinois.

HEALTH

There is a "health" wave rising in America that is national in its sweep. The forces that are generating it lie deep, and they are multifold in nature. Without doubt its rapidly gathering force is due to an immediate and altogether personal happening—the serious illnesses that have twice stricken the President of the United States within a brief period. That he made a splendid recovery from the first and at this writing appears to be doing equally well in his convalescence from the second has made the American people acutely conscious of the importance of skilled diagnosis and wise therapy. It has made them aware, too, of the great gaps in health planning for all the people. The President, our Congressional leaders, and the entire body of legislators are all deeply concerned with health as a vital factor in the nation's strength and a resource not adequately guarded.

It is not surprising, therefore, that this national attitude of mind is reflected politically and legislatively in so widely encompassing a bill as the Health Amendments Act of 1956 (S. 3958) unanimously reported to the Senate by its Public Welfare Committee. Whether or not this bill receives favorable Congressional attention before the Congress finds itself obliged to adjourn is not significant. The point is that the bill's proposals are so important that sooner or later favorable action will undoubtedly be taken, even though it may not be immediate, as requested by the Senate Public Welfare Committee on the basis that there was "widespread agreement as to the desirability of immediate action."

The bill is divided into five titles covering as many sections, each making explicit provisions for the health needs named in the titles. In reporting on each title, the Committee based its opinions on hearings and deliberations with representatives of groups affected by the various provisions of the bill. Supporting evidence for the bill is convincingly factual. It is part of the obligation of the physician as a citizen to know the fundamentals of the problems which the bill outlines and for which it attempts to provide some answers.

Title I—Graduate Training of Public Health Personnel.—At a time when there is an increasing need to provide for specialized skills and knowledge for public health work, the number of personnel being trained for this work has dropped steadily since 1947. The problem is a critical one for local, state, and Federal agencies. The bill would authorize the Public Health Service to make traineeship awards for graduate or specialized training in public health for physicians, dentists, nurses, engineers, and other public health specialists. The Surgeon General would be in charge of the program with an expert committee to advise him in its administration.

Title II—Advanced Training of Professional Nurses.—This section of the bill recognizes that the

acute shortage of nurses can be coped with only by providing an adequate supply of professional nurses qualified to teach in the various fields of nurse training and to fill key administrative and supervisory positions in the nation's 6,000 hospitals and 4,000 public health nursing agencies. Three out of four of our nurses now enrolled in advanced training programs are in part-time study programs requiring 3 to 10 years for completion. Traineeship would be provided through grant funds to nonprofit or public institutions which in turn would select and aid the individuals in speeding their preparation.

Title III—Practical Nurse Training.—The bill proposes a 5-year program of Federal grants as a part of the present Federal-state program of vocational education. The practical nurse as defined by the bill is an individual trained in a 1-year program consisting of 3 months of classroom and laboratory instruction and 9 months of supervised experience with patients in a hospital. The bill would earmark 5 million dollars a year for the program for 5 years and would increase the present number of graduates of the program from 5,000 a year to 15,000 a year by the end of the 5-year period.

Title IV—Extension of Hospital Survey and Construction Act.—Under this provision the existing hospital construction program would be extended without change for an additional 2 years. Federal grants would continue to be made to cover part of the cost of construction of hospitals, public health centers, and related medical facilities.

Title V—Mental Health.—Under this title special project grants would be made for experimental programs in the field of mental health. Investigations of possible substitutes for hospital care would be made for certain classes of mental patients, including day-care hospitals, more intensive treatment of newly admitted patients to mental hospitals, and new types of institutional care for the senile aged.

Such, in essence, are the proposals of the Health Amendments Act. Without question one of the initiating factors in this very practical recognition of certain of the health needs of the nation goes back as far as December 18, 1952, when the comprehensive report of the President's Commission on the Health Needs of the Nation was made available to our citizenry. A year previously, organized medicine termed the establishment of the Commission a political move and continued to take a dim view of the study until the published document was treated with great seriousness by the American press. Four years later, so marked has become the sentiment of the nation on the need for health planning that one sees little criticism of such provisions as this Amendments Act offers. In the closing sentence of the letter transmitting the 1952 Report to the President, the chairman of the Committee wrote that "in all humility we think this Report lays the groundwork for men of good will to unite in a common effort to improve the people's health, the background of our democratic strength in a free world." The Health Amendments Act is no isolated instance—it is a trend, gathering substance.

Perhaps it was necessary for the nation to have its President twice seriously stricken to awaken it to the fact that health planning for its people is a matter beyond politics, beyond the "socialized" medicine curse, and beyond organized medicine's concept that to protect the fee-for-service basis is its total obligation to society.

Why should political action relating to a nation's health needs be a matter concerning the osteopathic profession? Simply because we have become obligated to furnish society with physicians, who in turn are responsible for rendering a health service. Health is becoming increasingly recognized as a province of government. It is a responsibility of the profession as a private medical agency and the duty of its members to go alongside political statesmanship in its attempt to solve, at least partially, a fundamental problem of the nation—how to provide for the health care of its people. The osteopathic profession is called on to exercise medical statesmanship in such matters, first by informing itself of trends in the thinking of a nation and, then, by exercising a leadership which reaches out much further than one occupied only with safeguarding itself.

RESEARCH PROGRESS IN MEDICINE

Current medical literature has reached a new high in volume, actually a plethora if measured by the time available to the physician for its perusal. Never before have the sources of medical information been so richly and readily accessible—there is even a considerable body of well-selected medical knowledge in the advertising material that daily crosses the desk. This excess can be frustrating to the point that the doctor makes no attempt to pursue a planned program of continuing education, but rests content with the practice of medicine as a business, a business in which his customers buy through him the latest items advertised for their needs, and all too often, fancied needs.

However, it is still possible for the physician to have the gratifying experience of being informed, not by picking up the fragments that fall willy-nilly in his path but by material carefully selected to present a total picture of progress in a given sector of medicine over a given period. That this kind of material is available is not widely known, and it is most likely to be passed up because it does not have the advantage of commercial advertising. Specifically, it is to be found in the yearly highlights of research progress in those medical studies that are conducted and supported by the National Institutes of Health of the U.S. Public Health Service. These highlights virtually constitute a report on progress in medicine. And most amazing is the practical knowledge that comes out of them, usable facts for the physician in everyday practice in such form as to give him a well-rounded and unified concept of progress in a given field.

The 1955 highlights are now available. An example of great timeliness is the "Highlights of Heart Research." Written for informed laymen and busy physicians, it is absolutely authentic and capable of

being read rapidly. The presentation, which is partly ecological, opens by asking questions about the "Big Two," hypertension and atherosclerosis, that should be in the minds of thinking readers. Why is there less atherosclerosis among some people living in different parts of the world and among different social and economic groups? Why is atherosclerosis more common among men of all ages than among women during their period of ovarian function? What is the relationship of emotional stress to high blood pressure?

The topics treated in the seventeen 8½ by 11 printed pages of this report cover today's cardiovascular research questions and give the answers that have been found (or are implied) that are applicable to the fundamental questions that plague the doctor in his daily practice. These topics include a study of nitroglycerin as still the best drug palliative for acute anginal pain, the meaning of the recent test-tube synthesis of bile salts, the significance of the Beck concept that death in coronary heart disease in many instances may be compared to the stopping of the pendulum of a clock and that restoration of the beat is like starting it again, the fact that ailing hearts are "choked" into failure by oxygen-robbing epinephrine, a method of making precise x-ray films of the heart, a new antirheumatic agent derived from the body itself, and a new anticoagulant which may prevent serious brain damage from interrupted heart action. In all, more than fifty topics are discussed briefly, simply, and practically.

The highlight method of presentation is developed in reporting the research progress and its applications in arthritis and metabolic diseases, in mental health, in allergies and infectious diseases, in neurologic and sensory disorders, and in cancer research—each from the report of the National Institute of Health conducting and supporting the program of a particular medical field. And in every instance, the meaning and practicality of the research program is the point stressed and the thing that makes these highlights of such great value to the practicing physician. In no other way can so much information be so quickly gleaned and in a manner so unified and integrated. These highlights are issued by the Social Legislation Information Service, 1346 Connecticut Avenue, N.W., Washington 6, D.C. They can be obtained by remitting 25 cents per document to the above address. This agency is an entirely nonpolitical and purely nonprofit service supported by contributions and subscriptions. It is one of the best known sources of information in all social fields and, especially for the physician, in all areas of health. This is one answer to the problem of planned reading to give a maximum of information in a minimum of time.

AN EDITORIAL CORRECTION

The June JOURNAL under the title, "A Part of the Picture," commented editorially on the role of The Foundation for Research of the New York Academy of Osteopathy and detailed the make-up of the body. In revising the final copy for printing, a line was dropped in typing, resulting in the omission of Dr. William O. Kingsbury's name as treasurer of The Foundation and the substitution of the name of Mr. Maxwell H. Tretter. Dr. Kingsbury has been treasurer since The Foundation's incorporation, and Mr. Tretter is the secretary. We regret the error.

Letters

Sir: Since my paper, "Methods of Making and Closing Cataract Incisions," was presented at the annual meeting of the Osteopathic College of Ophthalmology and Otorhinolaryngology, I have performed several cataract operations using fixation rods. Inasmuch as these operations have all turned out well, I would like to bring my experience to the attention of those who might benefit from it, particularly those who heard the original presentation and those who have read the paper in the Eye, Ear, Nose, and Throat Supplement to the April, 1956, JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION.

By using fixation rods under the superior rectus and the medial rectus tendon, I found that the tilt of the eye for surgery is better than with other methods and is still strongly fixed. By using a tonometer that can be sterilized and used at the time of surgery, I have found that I can determine the amount of pull necessary by the fixation rods to lower the intraocular tension of the eye to 12 mm. or below. This special tonometer is all metal. The fixation rods are #1, #2, or #3 lacrimal probes cut off so that the thumb plate is still attached.

Two recently purchased muscle hooks are better than those I have previously had, in that the tips are bent upward in such a way that they protrude through the conjunctiva, allowing a scissor or knife nick to expose them more easily when passed down, under, and up again, anchoring the tendon. This allows passage of the fixation rod under the muscle with very little trauma.

The fixation rod for the superior rectus is passed from the lateral to the medial side, with the thumb plate outward. The medial rectus rod is passed superiorly downward, with the thumb plate up. These rods, when in place, bridge the orbital cavity and can be bent, so that sufficient tension is placed on the muscles to fix the eye and to maintain the palpebral space.

I still find it advisable to use a suture in the margins of the lower and upper lids. The lower suture helps as traction in viewing the placing of the erysiphake.

I now use an erysiphake most of the time because, with this new fixation, I have found a dropping inward of the uveal tract when the eye is opened. Although forceps could still probably remove the lens safely, I feel the erysiphake is more satisfactory. Incidentally, I have found that most people I have talked to did not know that the erysiphake should be filled completely with saline before using.

With this new method, I have found that a very wide pupil is necessary in using the erysiphake, and I have accomplished this by using sterile Neosynephrine, 1 per cent, drops in the eye at the time of surgery, before the eye is opened. The other technic of the operation remains the same.

I should like to recommend this method of fixation. It will help to prevent vitreous loss, and it will help cutting and placing of sutures. With it, there is no need of a lid retractor. It gives a larger operative field, and counter pressure from below in tumbling is not hindered.

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Notes and Comments

Peptic Ulcer.—

With the cause of peptic ulcer still unknown, it is not surprising that medical treatment continues to be based on neutralization of gastric hydrochloric acid, inhibition or elimination of acid secretion, and decreasing motor activity of the stomach and duodenum. However, while general principles of ulcer therapy have changed little in recent years, there have been noteworthy advances in their application.

Still of prime importance are the relief of pain and healing of the ulcer in acute episodes, prevention of recurrences, and prevention of complications when recurrence cannot be avoided. Consequently, emphasis is still placed on restricted diets, mental and physical rest, antacids, sedation, antisecretory and motor-inhibitory drugs, and avoidance of stimulants.

Diet continues to be of great importance, but there has been a trend away from the milk, cream, and restricted list of soft foods decreed by tradition. Instead, there is a tendency toward the exclusion of foods that act as irritants or increase gastric secretion or motility, but inclusion of any nonirritating foods that tend to absorb or neutralize the gastric hydrochloric acid.

High protein intake is emphasized. It has been found that many ulcer patients have protein deficiencies, but these can be corrected by increasing protein levels in the diet. Also noted is that patients tend to utilize amino acids more efficiently when protein is taken in the form of milk or eggs than when it is taken as protein hydrolysate. Currently recommended is an intake of 90 to 95 grams of protein daily. Much of this can be supplied in fortified milk preparations which are easily made by adding a cup of powdered milk to each quart of liquid milk. High fat intake is being de-emphasized because of the possibility that long-term use of such diets predisposes the patient to arteriosclerosis.

The value of antacids is occasionally questioned, but there is general agreement that they are useful and that they should be of a nonabsorbable type. Absorbable alkalies are mentioned today only to be condemned, for the well-known phenomenon of acid rebound is just one phase of the problem they present. In some patients, use of absorbable alkalies together with heavy milk intake leads to alkalosis and, occasionally, irreversible renal failure, though the condition will usually correct itself when the offending therapy is discontinued.

Probably the most satisfactory and most widely used antacid is aluminum hydroxide gel, which is more efficient and less constipating when combined with milk of magnesia. The liquid form works better than tablets, probably because of the greater surface area immediately available, and a dose of about 15 cc. is required for therapeutic effect. Lesser dosages are usually inadequate and give unsatisfactory results. Also to be noted is that diarrhea occasionally appears when enough of the combination is used for adequate antacid effect.

Belladonna and atropine continue in use to cut down gastric motility and secretion, but it is necessary to standardize the dose for each patient. Newer anticholinergic drugs have come into wide use and have definite value, but like the older drugs are limited in their usefulness. Enzyme inhibitors have been used recently with some success, but as yet have not been thoroughly evaluated. Drug therapy aimed at inhibition of secretion and motor activity can be summed up by noting that it is worth using but is possibly the least valuable factor in treatment. This statement also tends to apply to sedation.

It should be obvious that the efficacy of alcohol as a test meal in gastric analysis precludes its use by ulcer patients during the acute phase. Caffeine is also harmful because of its stimulating effect, so that abstinence from it is still recommended. Tobacco does not stimulate the production of gastric acid per se, but nicotine does have a harmful effect in that it inhibits the secretion of alkali in the duodenum. It is therefore interdicted if the best results are to be attained.

Physical and mental rest are as important as ever, but are known to be difficult and often impossible to achieve. However, there is a trend toward applying the regimen of treatment for acute episodes whenever the patient is under stress, *even if no ulcer symptoms are present.* It is generally felt that this will help prevent recurrences, which would have to be treated as acute episodes if they occurred.

In the article, Recent Advances in Medical Treatment of Peptic Ulcer, appearing in *The Medical Clinics of North America* for March, 1956, it is noted that the most common error in management of ulcer patients is discontinuing intensive therapy too soon after symptoms subside. The authors, on whose article the material presented here is based, are of the opinion that this is an error because symptoms are likely to disappear before the ulcer is healed, and untimely liberalization of treatment invites recurrence of the acute ulcer or formation of a chronic ulcer where there is no need for a chronic ulcer to be. They stress that successful therapy is a long-term project, a lifetime project in many cases, and that any attempt to treat each episode as a separate entity without considering the patient's problems between attacks is an injustice to the patient and virtually foredoomed to failure.

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Cardiac Surgery.—

While impressive progress has already been made in the field of cardiac surgery, future advances made possible through the use of technics now in the experimental stage may be even more impressive.

One development that may become important is a disposable membrane oxygenator for use in a heart-lung machine. The machine is now being used experimentally on dogs. The oxygenators, which are easily made, disposable, and readily adaptable to mass production, achieve their effect by the circulation of heparinized blood through polyethylene tubing. Present units will each maintain a 2 kg. dog, using the "low-flow" prin-

ciple, by which 35 ml. of blood per kg. of body weight per minute are oxygenated. As many as ten of these units may be used in parallel, allowing present use in body weights up to 20 kg. Results achieved to date have been good: mortality was comparatively high in the early phases of the work, but has decreased considerably as familiarity with the technic has been acquired.

As a corollary to the use of an artificial heart-lung preparation, elective cardiac arrest can be most useful. Since the artificial preparation allows temporary interruption of normal heart and lung function by circulating and oxygenating the blood, cardiac arrest without serious aftereffects is feasible. The oxygen requirement of the resting heart is low enough to allow this interruption for short periods without harmful effect on the myocardium. Elective arrest has been carried out successfully by coronary perfusion with a solution of potassium citrate. In a recent series, cardiac arrest was initiated by this method in ten dogs and held for periods of time ranging from one half minute to 23 minutes. Normal rhythm was restored in all dogs. In one dog the heart had to be massaged after the venae cavae were released, to avoid overdistention of the heart. Cardiac function resumed spontaneously in all cases after releasing the venae cavae and aorta, the potassium solution being flushed rapidly out of the coronary vessels by the inflow of blood. When one dog developed ventricular fibrillation, potassium asystole was repeated, after which the heart resumed its normal rhythm.

In the same issue of the *Cleveland Clinic Quarterly* (April, 1956) in which the work on the disposable oxygenator and potassium arrest in dogs was described, a report was made of three cases in humans in which elective cardiac arrest using potassium asystole was carried out for open heart surgery, with two satisfactory recoveries and one death. The cause of the death could not be determined at autopsy. It was felt that the results were sufficiently good to warrant further use of the procedure, and a note appended to the article pointed out that the technic had been used successfully on five additional patients who were operated on after the paper had been submitted for publication.

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Tuberculin Reactions and Tuberculosis.—

Children who exhibit positive tuberculin reactions have evidently been infected and may have subclinical tuberculosis, according to Dr. Robert Debré, president of the International Children's Center in Paris. French and Norwegian studies have indicated that as many as 12 per cent of tuberculin-positive children will develop active tuberculosis before reaching early adulthood, a significantly higher percentage than found among tuberculin-negative children. As a result of these findings, a group of 4,000 children in France who have been found to be positive reactors are now being studied—half are being given chemotherapy and half are being used as untreated controls. In *Medical News,* published by the CIBA Pharmaceutical Products, Dr. Debré indicated that results from study of the 4,000 children are not definitive but are encouraging: some of the untreated children have developed active tuberculosis, but to date none of the treated children have done so. He also commented that he thought such treatment was entirely justified on the basis of the evidence now available, because the danger that the child will develop active tuberculosis is too great to do nothing but hope the child will develop adequate immunity to the disease.

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Topical Hydrocortisone.—

The extent to which topically applied hydrocortisone is absorbed into the blood stream to produce possible systemic effects can now be determined by use of a preparation known as Delta FF. The drug prevents hydrocortisone secretion by the adrenals by suppressing ACTH production, with the result that any hydrocortisone found in the blood must have been absorbed from topical application. Results of a pilot study using this technic were published in the April, 1956, *Journal of Clinical Endocrinology and Metabolism* in an article by Dr. Grant W. Liddle of the U. S. Public Health Service's National Heart Institute. In this study, absorption through the intact skin was found to be minimal (about 2 per cent) but was appreciably greater (26 to 29 per cent) through the mucous membrane of the vagina and rectum.

It is important to know whether local applications of hydrocortisone get into the general circulation because of its suppression of inflammation and its role in the regulation of the use of carbohydrates and its response to stress.

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Whole Blood Storage.—

Whole blood may possibly be stored indefinitely by freezing and preserving it in liquid nitrogen at a temperature of −195 C., according to Dr. Harold T. Meryman of the Naval Research Institute, Bethesda, Md., in a report at the Fifth Annual Symposium on Blood, which was sponsored by Wayne University at Detroit. Dr. Meryman noted that this has been done by spraying the blood into the liquid nitrogen through a fine plastic capillary. The droplets freeze into the form of a fine, red sand, which can be reconstituted by sprinkling it onto a warm saline solution. The blood components so treated appear to remain "morphologically intact."

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Impairment and Mortality.—

The survival for persons with certain physical impairments is shorter than normal, even though their impairment is such that they are considered insurable. In a recent insurance study, it was found that persons with systolic murmurs heard over the apex of the heart but who had no history of rheumatic or streptococcic infection had a mortality rate, over the 15-year period of the study, about double the rate among people who did not have such murmurs. If there was also a history of rheumatic or streptococcic infection, those who had murmurs had a mortality rate 2.4 times that of standard risks. Enlargement of the heart also had an adverse effect on survivorship in these persons, the adverse effect increasing with the enlargement of the heart. For unknown reasons, the mortality from cancer was

significantly higher than the average in persons with systolic murmurs over the apex. An encouraging note is that the total death rate among the group is materially lower than it was 25 years ago.

People who reported two or more cases of cardiovascular-renal disease occurring in members of their families before 60 years of age, suffered about twice as much mortality from cardiovascular-renal disease as standard risks, while their over-all death rate during the 15-year period was 1.4 times that of normal individuals. If individuals had an unfavorable family history and in addition were overweight or suffered from even a slight elevation in blood pressure, the mortality was 1.7 times normal, while those who had an unfavorable family history but were free from overweight or hypertension had a mortality experience only 1.25 times normal. While small, this difference is statistically significant, and demonstrates the increased importance of prevention of these conditions in people who have an unfavorable family history of cardiovascular-renal disease.

Higher than normal mortality occurs in ulcer victims, about three times as many of whom suffer from duodenal ulcers as from gastric ulcers. Among these people, the mortality for those who were medically treated was 1.2 times normal, while among the surgically treated group the rates were 2.1 and 1.9 times normal for gastric and duodenal ulcers, respectively. The source from which this was taken, the *Statistical Bulletin* of the Metropolitan Life Insurance Company, attributes this difference between medically and surgically treated cases to the tendency for surgical treatment to be confined to the more serious cases. The study also indicated that there was a somewhat less favorable than normal outlook among those who had a history of gallbladder disease, but that among those who had been surgically treated, the outlook was better for those in whom the gallbladder had been removed than those in whom it had only been drained.

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Alcoholism Unit.—

That the states are beginning to recognize that alcoholism is a public health problem can be seen in the fact that alcoholism is being treated at the New Jersey Neuropsychiatric Institute in a special treatment unit consisting of a 54-bed, open cottage type of institution. The present unit serves male patients, but a similar unit for women is expected to open sometime in the future. The unit, which accepts patients on a voluntary basis, provides a 6- to 8-week treatment program. Personnel at the unit emphasize that it does not offer complete treatment, but rather it participates in a sequence of events leading to rehabilitation of the alcoholic.

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Timing of Births.—

The old tradition that more babies are born in the gruesomely early hours of the morning than at any other time seemed to have been disproved by statistical studies made a few years ago: the studies suggested that it just seemed like more. However, more recent figures indicate that the previous ones gave a distortion of the picture and the old tradition was right all the time. In more than 33,000 births occurring in five hospitals located in three states, more births consistently occurred between 3 a.m. and 11 a.m. than at any other time of the day, and 48 per cent more births took place at the peak hour, 5 a.m., than at the low hour, 7 p.m. Cesarean sections, second or third babies in multiple births, and mid or high forceps deliveries were excluded from the series. Peter D. King, M.D., reporting the results of the series in *Science* for June 1, 1956, notes that distortion was introduced into a frequently cited previous study by an arbitrary and, as it happened, unfortunate division of the day into two 12-hour periods, running from 6 a.m. to 6 p.m. and 6 p.m. to 6 a.m. Quite fortuitously, both the peak and low periods of the day fell into the 6 p.m. to 6 a.m. period, which also cut across the peak 3 a.m. to 11 a.m. period. As a result, variations that occurred from hour to hour cancelled each other out to produce the basis for an erroneous conclusion to be drawn. The present results were obtained by tabulating the births on an hour by hour basis.

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In Briefer Form.—

Urethane and triethylene melamine used in combination show promise of clinical usefulness in the treatment of human breast cancer, according to a report in the April, 1956, issue of *Surgery, Gynecology and Obstetrics*. The article emphasizes that while the combination has produced good results in clinical trials, much more work is needed before its true potentialities can be determined. . . . Adverse changes in the bronchial mucosa were found to parallel cigarette smoking, in a series of autopsies reported before the National Cancer Conference June 4 to 6. The report, prepared by a team of Veterans Administration doctors, indicates that the abnormal changes, possibly of a precancerous nature, were roughly proportional in frequency and extent to the amount of cigarette smoking done by the patient. . . . The richest known source of vitamin C is the juice of the acerola, or Puerto Rican cherry, which contains about 4000 mg. of ascorbic acid per 100 ml. of juice. The juice, which has a pleasant, tart taste, has been successfully used as a source of vitamin C for infants who are allergic to orange juice or whose allergic background is such that giving them orange juice seems inadvisable. . . . Vaccinate with Salk polio vaccine now and throughout the summer, is the recommendation of Surgeon General Leonard A. Scheele of the United States Public Health Service, in a statement that appears in "New Information for Physicians on the Salk Poliomyelitis Vaccine" distributed by the National Foundation for Infantile Paralysis. Dr. Scheele notes, in urging the use of the vaccine even during periods of rising incidence of the disease, that "The total preventive effect of the vaccine is much greater than any slight hazard of provocation." . . . That smog is everybody's business has impressed itself upon businessmen to the point where many industries that do not contribute to the formation of smog are contributing important amounts of money to the Air Pollution Foundation for research on the control of the problem, according to Dr. Lauren B. Hitchcock, president of the Foundation.

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THE LEGAL STATUS OF INTERNS AND HOSPITAL RECORDS

An intern is a person who has received a professional healing art degree upon graduation from a medical, osteopathic, or other healing art college and has undertaken further professional educational training of an almost exclusively practical clinical character. In the medical and osteopathic professions this training is usually taken in a hospital approved by the respective national organizations or a state licensing agency. In some of the other healing art groups an internship is taken in a clinic or office, hospital facilities not being available. An internship is no longer required as a prerequisite to graduation from any medical or osteopathic college. Only approximately a majority of states require an internship as a prerequisite to licensure. An intern thus may or may not be a person licensed to practice in the state in which he takes an internship. Even in some of the states which do not require an internship as a prerequisite to licensure an intern may not be licensed during his internship because the state law may exempt persons taking such training from the licensing provisions of the law.

Since there is a great lack of uniformity in the provisions of the state licensing laws, it is difficult to state with definiteness the exact legal status of interns in all areas. For example in some states an internship is required as a prerequisite for the licensure of doctors of osteopathy but not for doctors of medicine or vice versa. Similarly in some states it may be the custom of interns to become licensed in the state before undertaking their internship but such licensure may have little or no actual legal significance when the practitioners are engaged in their internship because of the character of work and type of responsibility which interns are given in a hospital. In situations which result in litigation, the legal issues may be affected by such matters as the state licensing law, legal status of the hospital, the type of medical or hospital service involved, the relation between the hospital and physicians on the hospital staff who may be involved, and similar matters which generally vary from state to state and from hospital to hospital. To a great extent, therefore, a memorandum upon this subject is difficult to prepare without clearly emphasizing the general nature of the subject matter and its limitations even in its application to hospitals in one state. It is, however, clearly required that interns in all states may not hold themselves forth as being engaged in the practice of the healing art, maintain offices, or provide services except as ordered under supervision unless they are licensed in the state.

An internship is a formalized educational training program. This fact cannot be minimized. The exemptions or privileges accorded to interns under state licensing laws are the direct result of the recognition given to this educational program by the state legislatures. Attempts to rationalize the intern's status apart from its educational characteristics, it is believed, have caused much of the confusion present in this field of law today. The licensing laws may give an intern the privilege of caring for sick persons and providing medical and surgical care by exemption because it is necessary for an intern to perform such services as an incident to the training program. If a practitioner holding himself forth as an intern is not actually serving in that capacity but rather under the cover of the name "intern" is serving as a resident or staff physician, then the courts will refuse to grant to such a practitioner the privileges accorded to an intern by statute and will hold him as being illegally engaged in the practice of medicine. In a California case, *Garfield v. Board of Medical Examiners,* 221 P. 2d 705 (1950), such was the case and the court made this statement, at p. 712:

> Boiled down, respondent's contention is that because interns act under supervision and the doctors here act under supervision, ergo, they were interns. To hold that men with the medical experience of these men, doing the type of work they were doing at Permanente, and receiving the salaries they received, are interns, would make such a wide hole in the statute as to make it practically unenforceable. Courts have to be realistic and not misled by attempts to attach a nomenclature which is completely unfounded.

The fact that in this case the court quoted at length from the A.M.A.'s *Essentials of an Approved Internship* for evidence that an internship is an educational program and used the *Essentials* as a guide to the legal duties of an intern emphasizes that hospitals in turn also must conform to such recognized standards for intern training as have been adopted for the guidance of the professions and that a deviation from such standards may result in a legal finding that a hospital is actually not using a doctor as an intern but as a staff physician. In this regard it is pertinent to note that under many state laws the legal standards for an approved internship are the standards for such training established respectively by the American Osteopathic Association and the American Medical Association.

A. THE INTERN UNDER LAW

Under some state statutes an intern or internship is defined and in such situations any statutory definition would be controlling. *70 Corpus Juris Secundum,* Physicians and Surgeons, Sect. 1 defines an intern thus:

> *An intern* is a physician; he is a graduate of a medical school with a doctor's degree, although it may be, not licensed to practice his profession in the ordinary way by so holding himself out to the public. In many instances he does the work of the physician and, in other respects, relieves the physician of professional services which he could ordinarily perform.

Probably the most exact statement in this definition is its holding that an intern is a "physician." The commonly accepted legal definitions of a physician do not require that the physician be licensed in any one or more states. They only require that the physician be learned in the healing art and able to take care of human ailments and diseases. The statutory and common law definitions of physician vary, but, generally speaking, it can be said that an intern is a physician in a legal sense. The very fact that a graduate of a medical or osteopathic college may be licensed without an internship in about a majority of the states evidences that the graduate has the qualifications of a physician upon graduation. It is also pertinent to recall that a doctor in order to be a medical expert witness in a case, need not necessarily be licensed in the state. Likewise in a malpractice action against a doctor, the fact of whether the doctor was or was not licensed to perform the particular operation or medical service rendered is not admissible in evidence. On the other hand, it probably can be said that ordinarily an intern does not establish personally with a patient in a hospital the legal physician-patient relationship which is often at issue in litigation because the patient is the patient of some physician on the staff of the hospital and the services furnished by the intern are of a limited, supervised, special character.

In the reported decisions the status of an intern is oftentimes closely allied to that of a nurse. The employment contracts of both interns and nurses are with hospitals and not with the physicians on the hospital staffs. A hospital, in all cases, is initially the employer and except in special circumstances, where a physician specially contracts for the intern's services the employer-employee status of the hospital and intern remains unchanged. In *Stuart Circle Hospital Corporation v. Curry,* (Va.), 3 S.E. (2d) 153 (1939), the court had before it a case in which a patient sued the hospital for alleged negligence on the part of an intern in injecting a dye solution into the patient's tissues and a nurse in negligently applying a hot water bottle on her arm. The intern and nurse were in the employ of the hospital, a profit corporation, and the hospital was held liable in money damages for their negligence. The court stated, at p. 158:

> Here we have an alleged contract to render medical service and nursing. The interne is not an independent contractor so far as the patient is concerned. His contract is with the hospital. His service is a part of the numerous duties prescribed by the hospital, and he is selected, employed, directed, supervised and paid by the hospital.
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> Both the interne and nurse are specially and highly trained. Both belong to trained and skilled professions. Where both are employees of a hospital and work directly under its supervision and control, there is no substantial difference in their relationship to a patient in the

hospital. Their duties and functions may vary, but all of their services to a patient are intended to secure and protect his welfare. In rendering such services they act on behalf of their employer.

The decision recognizes that a physician on the staff of a hospital on the other hand is an independent contractor and he alone is responsible for the exercise of his professional skill and judgment, subject to no control by the hospital in the execution thereof. If the hospital did assume control of the physician's acts the decision infers that liability could rest upon the hospital, and, while not discussed in this case, liability would also occur if the hospital had been negligent in the exercise of due care in appointing the physician to the hospital staff. If a hospital did control the manner and method by which a physician provided care it might be subject to the allegation that it was engaged in the corporate practice of medicine. Even in the situations where a physician is on salary as a house physician, the physician is not controlled in the exercise of his professional skill and judgment.

In *Eureka-Maryland Assurance Co. v. Gray,* 121 F. (2d) 104 (1941), one of the questions before the court was whether hospital records made by an intern showing the history, diagnosis, and treatment of the deceased insured while in a hospital were privileged communications and thus not admissible in evidence. The court recognized that the decisions in other jurisdictions on this question differed depending upon whether the courts thought the matter was one of public policy requiring that the physician's privilege be extended to others who aid him in his work, or upon whether the statute clearly restricted the privilege solely to the physician with whom the physician-patient relationship had been established and that any extension of the privilege to others should be made by the legislature by amending the law. Courts have had difficulty with cases of this type because the statutes where enacted were intended to protect the physician-patient relationship and in the case of the intern that relationship ordinarily has not been established. Nonetheless as the above cited decision indicates, courts will attempt to extend the meaning of the statute to cover the intern. The doctrine of privileged communications is one purely of statutory origin for no such privilege existed at common law, nor does it exist in some seventeen states today. In England, no such legal privilege exists between physicians and patients. In the *Eureka* case the court held that the statute covered an intern and stated, at p. 107:

> The local statute is very broad. It forbids disclosure by the physician of any information obtained by him in his professional capacity. The intern is himself a physician. He is a graduate of a medical school with a doctor's degree, though, it may be, not licensed to practice his profession in the ordinary way by so holding himself out to the public. But it is common knowledge that a part of his duty is to get the medical history of the patient, and in this respect he is the attending physician. Not only this, but in many instances, he does the work of the physician and, in other respects, relieves the physician of professional services which he would ordinarily perform. It would be straining the law to hold that disclosures made to him by the patient are not equally privileged as those made to the physician in charge.

The hospital records made by the intern were thus held to be not admissible in evidence. In *Hohenthal v. Smith,* 114 F. (2d) 494 (1940), the overwhelming weight of authority was said to be, at p. 496:

> . . . that the mere fact that the surgeon gives the instructions, or even specially designates the particular employee who is to carry out the instructions, does not give rise to a master-servant relationship. Part of the service furnished to the patient and charged for by the hospital is the assistance of nurses, interns and attendants in caring for the patient after the operation pursuant to instructions given by the operating surgeon. They perform the duty of their employer (the hospital) to the patient when they carry out the instructions of the doctor.

The cases appear to hold that an intern is only the employee of the hospital, unless by some special contract in certain instances he becomes the special employee of the physician or surgeon. The physician or surgeon is not liable for the negligence of the intern unless the physician was negligent in giving him instructions, or he was present and could have avoided the injury by the exercise of due care, or there was a special contract that made him responsible for the intern's negligence under the doctrine of respondeat superior. In some states the courts have distinguished between hospital administrative services and professional services. In such jurisdictions the hospital is liable for the negligence of the intern if he is performing a hospital administrative service, but not if he is performing a professional service requiring the skill and judgment of a physician. Where the negligence involved the latter type of service the intern and his supervising physician may be liable to the injured patient. The distinction here made by the courts is based upon the premise that a hospital may not engage in the corporate practice of medicine and hence cannot be liable for negligence involving acts of a purely professional character, but rather only of an administrative hospital character.

An intern is not an employee under the Social Security Act only because of a specific exemption provision in Section 3121(b)(13) of the Act. It has been held that an intern is an employee for the purposes of the Workmen's Compensation Act, *Turritto v. St. Mary's Hospital,* 14 N.Y.S. (2d) 647 (1939). In some states hospitals are not covered by the Workmen's Compensation Act, unless the hospitals voluntarily elect to come under the Act. The importance of the state licensing law upon the legal status of an intern is exemplified by *Nickley v. Skemp* (Wis.) 239 N.W. 426 (1931), in which a complaint filed by a patient was held to state a cause of action against three unlicensesd interns in a Wisconsin hospital for negligent malpractice. The court stated, at p. 428:

> . . . by section 147.15, Stats., an interneship is required as a part of one's medical education before one can be licensed to practice. This is a legal sanction of the performance of such duties on the part of the internes as are usually and ordinarily performed by them. The performance of such duties does not constitute the practice of medicine or a representation that the interne is authorized to practice medicine.

In this legal action the hospital itself had not been joined as a party defendant.

B. HOSPITAL RECORDS AND THE INTERN

The laws relating to hospital records are subject to considerable variations and differences depending upon the state in which the hospitals are located. In the early history of this country, hospitals did not keep any records except, perhaps, admission records. The development of an organized system of hospital records as they are known today largely emanated from the impetus given to this phase of hospital operation by the hospital standardization program of the American College of Surgeons. Approval and inspection programs of professional organizations concerned with hospital records have largely been responsible for bringing about a uniform system of hospital records.

In some states the state statutes such as the hospital licensing, communicable disease, workmen's compensation, public assistance, aid to the needy, vital statistics, or similar laws may or do require that hospitals keep records. There are conflicting decisions in the states as to whether hospital records are covered by a privileged communication statute applicable to physicians. The text, *Law of Hospital, Physician and Patient,* states, at p. 642:

> Some courts hold that the testimony of a physician is a confidential communication, but the hospital record is not. For example, the Pennsylvania rule is that the chart of a hospitalized patient is admissible in evidence, but the physicians and surgeons may not testify in civil cases to communications made to them by their patients which tend to blacken the patient's reputation.
>
> In Louisiana, the court refused to sustain the contention that hospital records are privileged communications between doctor and patient. Hospital records are not privileged in Ohio, since they are public records. In Florida, the common law is still in force, so that a hospital record, when properly identified and otherwise admissible, is without privilege. Mississippi holds that the privileged communications statute does not apply to cases where the law itself requires the disclosure of the condition of patients.

No conclusive statement can thus be made applicable to the laws of all states. Hospital records and their admissibility in evidence in a lawsuit are not handled uniformly in all states. Their legal status and admissibility are affected by the rule that evidence is hearsay when its probative force depends on the competency and credibility of some person other than the witness. It has been said that any statement offered in evidence that is not made by the author as a witness before the court, or when he is subject to cross-examination, is hearsay. Basically, therefore, hospital records are hearsay evidence. In an article in *The Journal of the American Medical Association,* April 7, 1956, p. 1239, it is stated that the courts of some states exclude hospital records as admissible evidence simply on that ground. The article notes, however, that a number of common law and statutory exceptions to the hearsay rule permit the use of hospital records. The common law exceptions are the following: (1) The Shopbook rule or principle that original entries of business records or books of account relating to sales or service are admissible; (2) entries made in the regular course of business by a person who has no motive to falsify

are admissible upon proper authentication; (3) official public records if required by law are admissible as public records; and (4) admissions against interest, that is, statements made by one person in conflict with his own best interest. By statute, exceptions to the hearsay rule have been enacted into law in most states codifying the common law Shopbook rule above noted and by the enactment of the Uniform Business Records as Evidence Act. The decision as to the admissibility in a legal action, therefore, of a hospital record made by an intern may not be the same in each state, depending upon the application of the hearsay rule as well as upon the interpretation placed upon or the wording of the Privileged Communication Statute of the state, if any.

If, however, as is stated in the text, *Law of Hospital, Physician and Patient,* at p. 651, medical records including hospital records are:

> . . . the compilation of the pertinent facts of the patient's life history, his illness, and treatment. In a larger sense the medical record is a compilation of scientific data derived from many sources, coordinated into a document and available for various uses, personal and impersonal, to serve the patient, the physician, the institution in which the patient has been treated, the science of medicine, and society as a whole. . . .

then the more complete the hospital records are the more nearly will they accomplish these purposes. Such being the case it seems clear that interns should exercise the same care and responsibility in making medical or hospital records as required of physicians who are members of the hospital staff.

Medical or legal articles on the subject of whether an intern should sign his name to hospital records made by him are few. Under some state hospital licensing laws or other public laws relating to the public health either by the laws or by regulations promulgated under the laws an intern may be required to sign the hospital records in order to comply with the legal requirements that hospital records be full and complete, or that hospitals providing care in certain types of cases such as those involving communicable diseases, gunshot wounds, poisons, or criminal cases keep complete records of such cases and report them to the proper public authorities. In some states local regulations involving maternity care in hospitals require compliance with special rules and regulations. In most states interns can be sued individually and in such cases if the hospital records disclosed the identity of the interns involved the hospital and other interns and physicians might be protected from possible joinder in a legal action and the expenses involved in establishing that they were not involved in the care of the particular patient concerned. In some states interns can legally sign public health certificates required by law such as birth and death certificates.

The educational standards for approval of internships by the American Osteopathic Association contain specific provisions applicable to the question of whether an intern should or should not sign his full name or an initial to hospital records. It certainly could be contended that it would be next to impossible for physicians on the staff of an intern training hospital to supervise the hospital records made by interns if the physicians cannot identify who made the records. The taking of histories and the preparation of records pertaining to the care of a patient are an integral part of the intern training program. How could it be determined whether an intern was adequately performing this function if the physicians in charge of the intern training program could not tell by looking at the hospital records what intern made the records? The A.O.A. Minimum Requirements and Standards for Osteopathic Hospitals approved for the Training of Interns and/or Residents require that:

> The case history, with the physical and laboratory findings, must show adequate evidence upon which the working diagnosis was made and treatment instituted, *p. 11;*
>
> The case records must be complete in all required details, including the admitting diagnosis and final diagnosis, *p. 11;*

and,

> Hospitals desiring approval for the teaching of interns are to be judged principally on the completeness and accuracy of their records. *p. 15.*

In particular, however, the following provisions of the A.O.A. Minimum Requirements and Standards for Osteopathic Hospitals approved for the Training of Interns and/or Residents appear conclusive:

> *Physical Examination Chart:*
>
> The intern or staff physician shall be required to make a complete physical examination. Vaginal and rectal examinations are required on all cases where such examinations would reasonably relate to the chief complaint, and the admissions or working diagnosis, final diagnosis, and/or the indicated treatment. The physical examination must be made immediately following the patient's admission to the hospital, and a provisional diagnosis must be recorded on the chart. The intern or staff physician making the examination must sign the report. *p. 16.*
>
> g) *Progress Record Chart:*
>
> 1. Progress notes recorded by the intern, resident, or staff physician, shall be made on all phases of the course of the disease. All significant physical changes, new signs and symptoms, complications, consultations, and treatments given must be noted. These progress notes should describe, in proper continuity, the course, progress, treatment, and disposition of the case. Progress notes must be signed by the intern, resident, or staff physician at the time of recording.
>
> 2. Manipulative therapy must be recorded in the progress notes when administered. *p. 17.*

Also under Laboratory Charts and X-ray Charts the standards on page 17 require that "The report must indicate the date of examination and the individual by whom the examination was made." These requirements appear to establish that as an educational matter the intern must sign the records made by him.

The Essentials of an Approved Internship of the American Medical Association similarly require that case records prepared by interns show by signature the name of the intern. In this respect, therefore, the requirements of the A.O.A. and the A.M.A. are similar. This fact could in litigation have considerable legal significance if in a lawsuit the subject of signatures on hospital records made by interns was in dispute. The similarity of the requirements of the two national approval agencies might even be in certain instances evidence of negligence on the part of a hospital which did not require interns to sign records. In *Garfield v. Board of Medical Examiners,* 221 P. 2d 705 (1950), the District Court of Appeals of California quoted at length from the A.M.A.'s *Essentials of an Approved Internship* as evidence that the doctors involved were not interns. Such could be the case when the standard of care required by a hospital in rendering care to a patient was held to be that standard of care rendered by hospitals of the same class in the same general area. The A.M.A. *Essentials of an Approved Internship* require, on page 13:

> 1. Adequate Records must be maintained. The attending physician or surgeon is directly responsible for the accuracy and completeness of clinical records concerning all patients under his care, including the record of the work done by the intern.
>
> 2. Endorsement of Records. All case records must show by signature the names of the persons who have written them in whole or part. Orders for treatment, for most diagnostic studies, and all progress notes must indicate the identity of the person responsible for them. The intern's record of his physical examination and diagnostic procedures should be verified by a competent supervising physician, calling attention to errors in observation and adding supplementary notes containing any relevant data which the intern may have omitted. If the intern's record is acceptable, the supervising physician should countersign and thus approve it. A summary, including the diagnosis, should be written by the intern and should be verified by the attending physician when the patient is discharged from the hospital.

Likewise, the *Intern's Manual,* prepared by the American Medical Association and published by W. B. Saunders (1948) provides as follows in regard to the duties of interns, page 4:

> (a) *Histories.* Each intern on duty in any clinical department should write or dictate the history, physical examination and his own diagnostic impressions of all patients assigned to him. The intern's record should be checked within twenty-four hours by a competent supervising physician, calling attention to errors in observation and adding supplementary notes containing any relevant data which the intern may have omitted. If the intern's record is acceptable, the attending physician should countersign and thus approve it. The intern should enter notes of progress on the record, describing patient's clinical course from time to time and make sure that all treatments or special diagnostic studies are correctly recorded. When a patient is discharged, the intern should write a concluding note which describes the final diagnosis and the patient's condition as he leaves the hospital. This should be countersigned by the attending physician. When the hospital has a shortage of interns a provision should be made whereby the interns on duty may not be burdened by an unreasonable amount of history writing. In such instances, it is recommended that a definite number of cases be assigned to the intern and that other charts be completed by the attending physician.

In view of the above requirements there can be little dispute but that an integral part of a hospital intern training program is the preparation and signing of hospital records as an educational matter by interns.

The very indefiniteness of the intern's legal status should persuade hospitals of the importance of having the intern record and identify his observations and notes. When signing such records the intern should sign his name in full in a legible

manner and should, as is advised to physicians, use an abbreviation only when that abbreviation is a matter of hospital record with the medical record librarian so that the identity of the person who signed the record by use of an abbreviation can be definitely established. The use of an abbreviation not of record may be of no value. It could well be of considerable importance in litigation involving the liability of a hospital or physician whether a hospital record was made by a student, nurse, intern, resident or physician on the staff. The particular record in fact might also determine whether the hospital, the physician or both in a case are liable or not for injuries to a patient, depending upon the law of the state. Such a case was *Hansch v. Hackett,* 66 P. (2d) 1129, wherein a hospital was sued for the negligence of its physicians and nurses in an obstetrical case where the patient developed eclampsia and died. In that case the court found one of the physicians not negligent but held that a jury could have found that the nurse employed by the hospital was negligent in not discovering the symptoms of eclampsia and recording them on the hospital chart so that the physician, when he read the chart, might have ordered the proper and necessary treatment. The symptoms of eclampsia, the court said, are such as should be observed by a nurse even though she might not know what was indicated thereby. The principle of this case would obviously apply with greater stringency to an intern who possesses professional skill and training in the healing arts far superior to that of a nurse.

An over-all review of the laws and decisions pertaining to hospitals and physicians indicates that the liability problems of hospitals, and apparently the best interests of the patient's health, evidence a need for interns to keep proper and accurate records and that the hospital and physicians on the staff of the hospital be able to determine the identity of the interns who make hospital records. The Intern Training Requirements of both the American Osteopathic Association and the American Medical Association clearly recognize that the signature of an intern on hospital records prepared by him is required in an approved and organized intern training program. The similarity of the requirements of the two national organizations primarily responsible for intern training programs in the United States has legal significance, in addition to its educational importance.

Department of Public Relations

CHESTER D. SWOPE, D.O.
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Washington

BILLS IN CONGRESS

H.R. 483—Mr. Short, of Missouri. Amends the Army-Navy-Public Health Service Medical Officer Procurement Act of 1947, as amended, so as to provide for appointment of doctors of osteopathy in the Medical Corps of the Army, Navy, and Air Force. Passed House July 18, 1955. Passed Senate, amended, May 21, 1956.

Changes in existing law made by the bill as passed the Senate are shown as follows: New matter is printed in italics (CAPS).

Army-Navy-Public Health Service Medical Officer Procurement Act of 1947,

AS AMENDED

Sec. 201. (a) Subject to any limitation on the commissioned strength of the Army, Navy, and Air Force prescribed by law, the President, by and with the advice and consent of the Senate, may make appointments in permanent grades of first lieutenant through colonel in the Medical and Dental Corps of the Regular Army, lieutenant (junior grade) through captain in the Medical and Dental Corps of the Regular Navy and first lieutenant through colonel for officers appointed with a view to designation as medical officers or dental officers in the Regular Air Force, in such numbers as the needs of the services may require. Such appointments shall be made only from (1) qualified doctors of medicine and doctors of dentistry who are citizens of the United States and who have such other qualifications as the Secretary concerned may prescribe for his service, OR (2) DOCTORS OF OSTEOPATHY WHO ARE QUALIFIED UNDER SUBSECTION (g) HEREOF.

(b) The doctors of medicine OR OSTEOPATHY and doctors of dentistry appointed under this Act shall be credited for purposes of determining lineal position, permanent grade, position on a promotion list, seniority in permanent grade, and eligibility for promotion with the amount of service prescribed by the Secretary concerned, but not less than the minimum prescribed below. A doctor of medicine OR OSTEOPATHY or doctor of dentistry appointed under this Act upon graduation from medical, OSTEOPATHIC or dental school may not be credited with less than four years' service. A doctor of medicine OR OSTEOPATHY appointed under this Act who has completed a one-year internship, or the equivalent thereof, may not be credited with less than five years' service.

(e) Notwithstanding any other provision of law, including those relating to selection for promotion, a doctor of medicine OR OSTEOPATHY or a doctor of dentistry who is appointed under this Act or any other provision of law may be temporarily promoted to the grade of captain in the Army or the Air Force, or lieutenant in the Navy, as the case may be, at any time after one year after completion of medical or dental school.

(g) TO BE ELIGIBLE FOR APPOINTMENT UNDER THIS ACT A DOCTOR OF OSTEOPATHY MUST (1) BE A CITIZEN OF THE UNITED STATES, (2) BE A GRADUATE OF A COLLEGE OF OSTEOPATHY WHOSE GRADUATES ARE ELIGIBLE FOR LICENSURE TO PRACTICE MEDICINE OR SURGERY IN A MAJORITY OF THE STATES, AND BE LICENSED TO PRACTICE MEDICINE, SURGERY, OR OSTEOPATHY IN ONE OF THE STATES OR TERRITORIES OF THE UNITED STATES OR IN THE DISTRICT OF COLUMBIA, (3) BE RECOMMENDED FOR SUCH APPOINTMENT BY THE SURGEON GENERAL OF THE ARMY OR AIR FORCE OR THE CHIEF OF THE BUREAU OF MEDICINE AND SURGERY OF THE NAVY, (4) POSSESS SUCH QUALIFICATIONS AS THE SECRETARY CONCERNED MAY PRESCRIBE FOR HIS SERVICE, AND (5) UNDER REGULATIONS PRESCRIBED BY THE SECRETARY OF DEFENSE HAVE COMPLETED A NUMBER OF YEARS OF OSTEOPATHIC AND PREOSTEOPATHIC EDUCATION EQUAL TO THE NUMBER OF YEARS OF MEDICAL AND PREMEDICAL EDUCATION PRESCRIBED FOR PERSONS ENTERING RECOGNIZED SCHOOLS OF MEDICINE WHO BECAME DOCTORS OF MEDICINE AND WHO WOULD BE QUALIFIED FOR APPOINTMENT UNDER THIS TITLE IN THE GRADE FOR WHICH SUCH DOCTOR OF OSTEOPATHY IS APPLYING.

H.R. 6376—Mrs. Green, of Oregon. Alaska Mental Health Act. Passed House January 18, 1956. Passed Senate, amended, June 7, 1956. Sent to Conference June 14, 1956.

H.R. 7225—Mr. Cooper, of Tennessee. Social Security Amendments of 1955. Passed House July 18, 1955. Reported in Senate, amended, June 5, 1956.

H.R. 7904—Mrs. Green, of Oregon. Amends Outer Continental Shelf Lands Act to provide that revenues be used as grants-in-aid of primary, secondary, and higher education.

H.R. 7910—Mr. Huddleston, of Alabama. Authorizes donation and transfer of Series E savings bonds to tax-exempt charitable organizations.

H.R. 7963—Mr. Smith, of Mississippi. Amends Internal Revenue Code to provide for public inspection of information required for certain organizations and trusts exempted from taxation.

H.R. 7964—Mr. Smith, of Mississippi. Relates to information required from certain tax-exempt organizations.

H.R. 8398—Mr. Scrivner, of Kansas. To provide direct aid to States and Territories for educational purposes only.

H.R. 8402—Mr. Smith, of Wisconsin. Allows cost of meals and lodging to be taken into account as traveling expenses in computing the income tax deduction for medical care.

H.R. 8556—Mr. Thompson, of New Jersey. Authorizes a 5-year program of expansion of medical education and research. Provides: "The term 'accredited medical school' means a school providing training leading to the degree of doctor of medicine, approved or accredited by a recognized body or bodies approved by the Surgeon General after he has obtained the advice and recommendation of the Federal Council on Medical Educational Facilities created under Section 703."

H.R. 8779—Mr. Frelinghuysen, of New Jersey. Provides program of financial assistance to students in higher education.

H.R. 8859—Mr. Thompson, of New Jersey. Provides for emergency 5-year program of aid for postgraduate education in public health.

H.R. 8863—Mr. Yates, of Illinois. Establishes Bureau of Older Persons in Department of Health, Education, and Welfare.

H.R. 8912—Mr. Priest, of Tennessee. Extends Hill-Burton Act for 2 years to 1959 (June 30).

H.R. 8913—Mr. Priest, of Tennessee. Authorizes continuing sickness survey by Public Health Service.

H.R. 8916—Mr. Rodino, of New Jersey. Provides loans to enable needy students to continue higher education.

H.R. 8936—Mr. Anfuso, of New York. Creates Department of Civil Defense in Department of Defense.

H.R. 8941—Mrs. Green, of Oregon. Establishes Bureau of Older Persons in the Department of Health, Education, and Welfare.

H.R. 9013—Mr. Priest, of Tennessee. Provides 5-year program of Federal construction grants to medical and dental schools. Provides: "The term 'medical school' means a school which provides training leading to a degree of doctor of medicine or osteopathy, or a graduate degree in public health."

H.R. 9014—Mr. Wolverton, of New Jersey. Same as H.R. 9013.

H.R. 9016—Mr. Wolverton, of New Jersey. Same as H.R. 8913.

H.R. 9017—Mr. Wolverton, of New Jersey. Same as H.R. 8912.

H.R. 9048—Mr. Priest, of Tennessee. Amends Public Health Service Act to authorize grants for special projects in mental health. Reported in House May 2, 1956.

H.R. 9091—Mr. Reed, of New York. Amends Social Security Act to increase public assistance payments and earmark medical care funds for Federal matching on a limited basis and 50-50 contribution.

H.R. 9092—Mr. Reuss, of Wisconsin. Establishes Bureau of Older Persons in HEW.

H.R. 9120—Mr. Cooper, of Tennessee. Same as H.R. 9091.

H.R. 9186—Mr. Mack, of Illinois. Authorizes 5-year program for construction of medical educational and research facilities. Provides: "The term 'accredited medical school' means a school providing training leading to the degree of doctor of medicine or osteopathy, approved or accredited by a recognized body or bodies approved by the Surgeon General after he has obtained the advice and recommendation of the Federal Council on Medical Educational Facilities created under Section 703."

H.R. 9349—Mr. Murray, of Illinois. Provides for voluntary coverage under OASI for self-employed veterinarians.

H.R. 9429—Mr. Kilday, of Texas. To provide medical care for dependents of members of uniformed services. Public Law No. 569, approved June 7, 1956.

H.R. 9447—Mr. Broyhill, of Virginia. District of Columbia Temporary Disability Insurance Act. Provides: "'Physician' means a duly qualified practitioner of medicine, surgery, or dentistry within the scope of authorized practice as licensed by the law of the District of Columbia or of any State."

H.R. 9521—Mr. Zelenko, of New York. Provides a partial tax credit for certain payments made to a public or private educational institution of higher education.

H.R. 9553—Mr. Lane, of Massachusetts. Provides grants and scholarships for nurses training.

H.R. 9658—Mr. Perkins, of Kentucky. Authorizes loans for needy students to continue higher education.

H.R. 9720—Mr. Cannon, of Missouri. Appropriation Act for Departments of Labor, and Health, Education, and Welfare. Continues limitation on Social Security maternal and child health, as follows: "Provided, That no part of any appropriation contained in this title shall be used to promulgate or carry out any instructions, order, or regulation relating to the care of obstetrical cases which discriminate between persons licensed under State law to practice obstetrics: Provided further, That the foregoing proviso shall not be so construed as to prevent any patient from having the services of any practitioner of her own choice, paid for out of this fund, so long as State laws are complied with: Provided further, That any State plan which provides standards for professional obstetrical services in accordance with the laws of the State shall be approved." Sent to Conference June 6, 1956.

H.R. 9868—Mr. Dingell, of Michigan. Amends Social Security Act for insurance against cost of hospitalization for OASI insured persons and their dependents.

H.R. 9980—Mr. Metcalf, of Nebraska. Same as H.R. 9868.

H.R. 9981—Mr. Metcalf, of Nebraska. Reduces Social Security retirement age of men from 65 to 60, and of women from 65 to 55.

H.R. 10223—Mr. Miller, of California. To readjust postal classification on certain educational material.

H.R. 10228—Mr. Priest, of Tennessee. Civil Aviation Medical Act of 1956. Provides: "'Medical Examiner' means any licensed physician who holds the degree of doctor of medicine, and who is authorized by the Administrator to perform physical and mental examinations of air men who are required by Civil Air Regulations of the Civil Aeronautics Board to hold medical certificates."

H.R. 10283—Mr. Cooper, of Tennessee. Amends Title V of the Social Security Act to authorize special project grants to institutions of higher education or research in connection with maternal and child health and crippled children's services.

H.R. 10284—Mr. Reed, of New York. Same as H.R. 10283.

H.R. 10302—Mr. Forand, of Rhode Island. Amends Social Security Act to enable States to establish more adequate public welfare programs.

H.R. 10333—Mr. Cooley, of North Carolina. Amends Social Security Act to increase the amount of outside earnings permitted OASI insured persons without deductions from benefits thereunder. Permits $3,000 in lieu of current $1,200.

H.R. 10436—Mr. Murray, of Tennessee. Provides nonoccupational group major medical expense insurance for Federal employees and their dependents.

H.R. 10620—Mr. Fogarty, of Rhode Island. Authorizes Commissioner of Education to make grants to public or other nonprofit institutions of higher learning to assist them in providing training of professional personnel to conduct research in, or conduct training of teachers in, fields related to education of mentally retarded children.

H.R. 10735—Mr. Keogh, of New York. Amends Internal Revenue Code to provide for the allowance, as deductions, of contributions to medical research organizations.

H.R. 11157—Mr. Harrison, of Virginia. Amends Internal Revenue Code to grant nonprofit educational institutions exemptions from the excise taxes which are now applicable to public educational institutions.

H.R. 11320—Mr. Abernethy, of Mississippi. To amend narcotic control laws in the District of Columbia. Passed House June 11, 1956.

H.R. 11357—Mr. Ashley, of Ohio. Establishes program of scholarships for students in science and education at institutions of higher education.

H.R. 11414—Mrs. Knutson, of Minnesota. Provides student loans to assist in pursuit of higher education.

H.R. 11518—Mr. Dorn, of New York. To provide for the establishment of a Commission to study the shortage of doctors of medicine in the United States.

H.R. 11520—Mr. Murray, of Illinois. Establishes a Council on National Fitness, to be appointed by the President from the fields of medicine, physical education and related sciences.

H.R. 11524—Mr. Priest, of Tennessee. Establishes National Library of Medicine in Public Health Service, to include Armed Forces Medical Library.

H.R. 11545—Mr. Hayworth, of Michigan. Provides an income tax deduction for amounts paid as tuition or fees to educational institutions above high school level and for amounts paid for books required by such institutions.

H.R. 11549—Mr. Priest, of Tennessee. Amends the Public Health Service Act for grants, for training professional and practical nurses and professional public health personnel.

H.R. 11577—Mr. Magnuson, of Washington. Establishes Bureau of Older Persons in HEW.

H.R. 11619—Mr. Boggs, of Louisiana. Narcotic Control Act of 1956.

H.R. 11630—Mr. Murray, of Tennessee. Revision of H.R. 10436.

H.R. 11633—Mr. Rees, of Kansas. Same as H.R. 11630.

H.R. 11638—Mr. Rhodes, of Pennsylvania. Establishes Bureau of Older Persons in HEW.

H.R. 11745—Mr. Elliott, of Alabama. To encourage and assist the States in the establishment of State committees on education beyond the high school.

H.R. 11746—Mr. Frelinghuysen, of New Jersey. Same as H.R. 11745.

H.R. 11760—Mr. Wainwright, of New York. Same as H.R. 11745.

S. 849—Mr. Hill, of Alabama. Health Research Facilities Act of 1956. Authorizes Federal assistance in construction of facilities for the conduct of research in the sciences related to health. Provides: "The term 'sciences related to health' includes

medicine, osteopathy, dentistry, and public health, and fundamental and applied sciences when related thereto." Reported to the House May 21, 1956.

S. 2587—Mr. Hill, of Alabama. Authorizes the President to make the Commissioned Corps of the Public Health Service a military service in time of emergency involving the national defense. Public Law 492, approved April 27, 1956.

S. 2925—Mrs. Smith, of Maine and others. Authorizes 5-year program for expansion of medical education and research. Provides: "The term 'accredited medical school' means a school providing training leading to the degree of doctor of medicine, approved or accredited by a recognized body or bodies approved by the Surgeon General after he has obtained the advice and recommendations of the Federal Council on Medical Educational Facilities created under Section 703."

S. 2976—Mr. Langer, of North Dakota. Provides for exclusion of portion of income paid to a restricted retirement fund, under which withdrawals may be made at age 65 or before age 65 in case of permanent and total disability "which shall be certified to the insurance company by affidavit of a licensed doctor of medicine other than the taxpayer."

S. 2977—Mr. Langer, of North Dakota. Revision of S. 2976.

S. 2990—Mr. Hill, of Alabama for himself and Mr. Smith, of New Jersey. Extends through June 30, 1957, the duration of the Poliomyelitis Vaccination Assistance Act of 1955. Public Law No. 411, approved February 15, 1956.

S. 3075—Mr. Hill, of Alabama for himself and Mr. Smith, of New Jersey. Extends Hill-Burton Act for 2 years to June 30, 1959.

S. 3076—Mr. Hill, of Alabama for himself and Mr. Smith, of New Jersey. Provides for continuing survey and special studies of sickness and disability in the United States, to be conducted by the Surgeon General of the Public Health Service. Passed Senate March 29, 1956. Reported to House with substitute amendment on May 3, 1956.

S. 3109—Mr. Carlson, of Kansas. Amends Social Security Act to provide for voluntary coverage under OASI for self-employed dentists.

S. 3138—Mr. Hill, of Alabama. Amends Public Health Service Act to authorize grants for special projects in mental health.

S. 3139—Mr. Martin, of Pennsylvania. Amends Social Security Act to increase public assistance payments and earmark medical care funds for Federal matching on a limited basis and 50-50 contribution.

S. 3153—Mr. Thye, of Minnesota. Extends definition of "medical care" relating to deductions for Federal income tax purposes so that it will include amounts paid for institutional care and training of mentally retarded child under 17 of taxpayer.

S. 3252—Mr. Purtell, of Connecticut, and others. Authorizes 5-year program of Federal construction grants for the purpose of assisting medical and dental schools to expand and improve their research and teaching facilities. Provides: "The term 'medical school' means a school which provides training leading to a degree of doctor of medicine or osteopathy, or a graduate degree in public health."

S. 3271—Mr. Kerr, of Oklahoma, for himself, Mr. McNamara, of Michigan, and Mr. Monroney, of Oklahoma. Amends Vocational Education Act of 1946 in order to promote scientific education.

S. 3297—Mr. Martin, of Pennsylvania. Amends Title V of the Social Security Act to authorize special project grants to institutions of higher education or research in connection with maternal and child health and crippled children's services.

S. 3430—Mr. Hill, of Alabama, for himself, and Mr. Kennedy, of Massachusetts. Establishes National Library of Medicine in Public Health Service, to include Armed Forces Medical Library. Passed Senate June 11, 1956.

S. 3517—Mr. Humphrey, of Minnesota, and others. Creates Federal Safety Division in the Department of Labor.

S. 3576—Mr. Langer, of North Dakota. To allow an additional income tax exemption for a dependent child who is a full-time college student.

S. 3620—Mr. Hill, of Alabama, and others. Authorizes Commissioner of Education to make grants to public or other nonprofit institutions of higher learning to assist them in providing training of professional personnel to conduct research in, or conduct training of teachers in, fields related to education of mentally retarded children. Passed Senate June 11, 1956.

S. 3621—Mr. Jackson, of Washington. Amends Atomic Energy Act of 1954 to authorize Federal assistance to colleges, universities, hospitals and other nonprofit or charitable institutions in the construction and operation of production or utilization facilities for all purposes including the generation of usable energy which may be utilized at the institution, for training purposes, and for medical therapy purposes. Relates to utilization of special nuclear material, atomic energy, and radioactive material.

S. 3677—Mr. Magnuson, of Washington. Same as H.R. 10228. Civil Aviation Medical Act of 1956.

S. 3710—Mr. Fulbright, of Arkansas. Allows additional income tax exemptions for a taxpayer or a spouse, or a dependent child under 23 years of age, who is a full-time student at an educational institution above the secondary level.

S. 3711—Mr. Fulbright, of Arkansas. Allows a taxpayer to deduct certain expenses incurred by him in obtaining a higher education. Amends Internal Revenue Code for the purposes.

S. 3748—Mr. Clements, of Kentucky. Authorizes grants of Federal scholarships to students in the fields of engineering and science.

S. 3760—Mr. Daniel, of Texas, and others. Narcotic Control Act of 1956. Passed Senate May 31, 1956.

S. 3853—Mr. Mundt, of South Dakota. Makes eligible for Hill-Burton aid a nonprofit corporation or association which receives, from the State or political subdivision, any funds for the operation of a mental health center or clinic.

S. 3901—Mr. Daniel, of Texas, and others. To amend narcatic control laws in the District of Columbia. Similar to H.R. 11320.

S. 3907—Mr. Hill, of Alabama, for himself, and Mr. Smith, of New Jersey. Extends for 2 years Public Health Service authority to hospitalize narcotic drug addicts committed by the District of Columbia Court. Passed Senate June 11, 1956.

S. 3931—Mr. Langer, of North Dakota. Provides Federal loans to individuals to enable them to obtain a college or university education.

S. 3932—Mr. Magnuson, of Washington. Establishes Bureau of Older Persons in HEW.

S. 3933—Mr. Magnuson, of Washington. Extends the authority of the National Science Foundation to include awards for scientific study or scientific work at the undergraduate level (in addition to graduate level under current authority).

S. 3958—Mr. Hill, of Alabama, and others. Health Amendments Act of 1956. Title I authorizes Public Health Service to make traineeship awards to defray educational expenses for graduate training of professional public health personnel. Title II authorizes PHS traineeship awards to institutions to cover tuition and fees and a stipend and allowances for travel and subsistence expenses for advance training of professional nurses. Title III amends the Vocational Education Act to authorize a 5-year program of grants to the States earmarked for the purpose of paying part of the costs of practical nurse training conducted in accordance with State plan approved by the Commissioner of Education. "Practical nurse training" is defined to include training of a similar nature to prepare persons for other health occupations in hospitals, or the health agencies, requiring less-than-college-grade vocational training. Title IV extends the Hill-Burton Act to June 30, 1959. Title V authorizes the Public Health Service to make special project grants in the field of mental health. Passed Senate June 11, 1956.

S. 3974—Mr. Bender, of Ohio. Amends Internal Revenue Code to grant to nonprofit educational institutions excise taxes now applicable to public educational institutions.

S. 4033—Mr. Flanders, of Vermont, and others. Makes Hill-Burton aid available to nonprofit clinics affiliated with nonprofit hospitals approved for intern or resident training.

S. 4061—Mr. Magnuson, of Washington. Allows additional income tax exemptions for a taxpayer or a spouse, or a dependent child, who is a full-time student at an educational institution above the secondary level.

Current Literature

THE USE OF BENADRYL TO DECREASE REACTIONS IN INTRAVENOUS UROGRAPHY

Herman Wechsler, M.D., reports a simple, safe method for reducing the incidence of adverse reactions to the contrast mediums used intravenously in urographic studies. He reported his observations in the *New York State Journal of Medicine*, February 1, 1956.

Experience with 425 patients disclosed fewer and less severe reactions to the contrast mediums when diphenhydramine (Benadryl) was mixed with sodium iodomethamate (Neo-Iopax) or with sodium acetrizoate (Urokon). Benadryl is a potent antihistaminic agent which appears to offset moderate and severe reactions to contrast mediums. This study was conducted at a veterans' hospital. Only 5 of the 425 patients were women. Ages ranged from 20 to 80 years. Just before injection, Benadryl, 20 mg., was dissolved in 2 cc. of water and added to the contrast medium; starting with the fifth patient, only 1 cc. of the antihistamine solution (10 mg. Benadryl) was added. The contrast mediums used were 50 and 75 per cent sodium iodomethamate or 30 and 70 per cent sodium acetrizoate. The more concentrated solutions were used on heavier patients. To control the trial, all patients in February and April, 1954, were given the Benadryl mixture and all patients in March and May of the same year were given only the contrast medium. Of the 205 control patients, 6 per cent reacted with itching of the skin or hives, 20 per cent with nausea or vomiting, 10 per cent with a feeling of warmth, and 6 per cent with such signs of shock as faintness, sweating, and weakness. Of the 220 patients on whom the Benadryl mixture was used, 0.8 per cent had itching or hives; 0.9 per cent had nausea or vomiting; 2 per cent complained of warmth; and 0.8 per cent had shock reactions. Adverse reactions were reduced to approximately 1 per cent by the use of Benadryl.

ACUTE CHOLECYSTITIS FOLLOWING THE SURGICAL TREATMENT OF UNRELATED DISEASE

Eighteen confirmed cases of acute cholecystitis after operations for unrelated diseases were analyzed in order to establish the features of the complication and to evaluate its management. The results are reported by Frank Glenn, M.D., and George E. Wantz, M.D., in *Surgery, Gynecology and Obstetrics*, February, 1956.

Although the patients ranged from 25 to 78 years of age, all but two were beyond 50 years, six in their sixties, and six in their seventies. The sexes were evenly represented. The primary diseases for which operation was performed varied. The operations included appendectomy, colectomy, skin graft to the face, cataract extraction, hernioplasty, closure of a colostomy, transuretheral prostatectomy, sigmoidectomy, uretoroplasty, nephrotomy, phlebectomy, retinal reattachment, and division of a pedicle flap on the face. Prolonged fasting (11 to 17 days) was a postoperative feature in seven cases and fasting of 1 to 6 days was part of the regimen in all cases. Acute cholecystitis was noted one day after the fast was broken in ten cases, two to seven days later in five cases and thirteen to eighteen days later in three cases; only one patient had symptoms before he had resumed feeding. Only one patient yielded evidence of pre-existing gallbladder disease. In the others, the acute inflammation appeared to have been superimposed on chronic cholecystitis.

The treatment of choice is early cholecystectomy, except in elderly patients who have recently undergone major operations. For them, cholecystostomy is the choice, even should it be necessary to perform it under local anesthesia. Cholecystostomy may spare the patient from the dangerous complications of acute cholecystitis until cholecystectomy can be performed under optimal circumstances, within 6 months.

To reduce the incidence of acute cholecystitis in the elderly following operation for an unrelated disease, the authors favor surgical therapy as soon as cholelithiasis is recognized. As this is not always feasible, the accumulation of large quantities of concentrated bile must be prevented by avoiding prolonged fasting and by instituting early postoperative mobilization. Drugs which retard the flow of bile from the gallbladder into the duodenum should be prescribed with caution, and acute systemic diseases and infections should be managed vigorously. Foods taken postoperatively should be low in fat and cholesterol content.

THE CLINICAL APPLICATION OF BIO-FLAVONOIDS IN OTOLARYNGOLOGY

The effects of the use of a natural water soluble bio-flavonoid compound and ascorbic acid on 565 surgical and 65 nonsurgical patients undergoing various otolaryngological procedures are reported in the April, 1956, issue of the *Eye, Ear, Nose and Throat Monthly* by Herbert B. Goldman, M.D. The study lasted over a 2-year period.

Early investigation of the natural bio-flavonoids revealed that when given in combination with ascorbic acid, these compounds provided a synergistic protective action against histamine toxicity and anaphylactic shock, they had a pronounced inhibitory action on hyaluronidase, and—most importantly—they maintained capillary wall and intercellular cement integrity. From a surgical viewpoint, this protection against capillary fragility and permeability is extremely significant because capillary function is closely associated with adrenocortical activity and the capillary wall is very susceptible to physiologic and pathologic changes induced by such stress reactions as surgery.

In this present study, dosage varied with the age of the patient. Children received 1 teaspoonful of cherry flavored syrup containing 100 mgm. ascorbic acid, 100 mgm. bio-flavonoid, and 0.66 mgm. menadione three times a day for 6 to 8 days preoperatively and for 4 days postoperatively. An antibiotic was also administered during this period. Older children received 2 teaspoonsful of the syrup for the same length of time. Adults were given 2 capsules each containing 100 mg. of ascorbic acid and 100 mg. of bio-flavonoid four times a day plus a separate capsule containing 5 mg. of menadione once a day.

Tonsillectomies were performed on 530 patients who had received the bio-flavonoid compound prior and subsequent to surgery. Several significant effects were observed: (1) Initial bleeding was decreased slightly but definitely. (2) Subsequent oozing was decreased so that a clamp and tie were used less frequently and pressure sponges were used rarely. (3) During adenoidectomies, clamps, sutures, or postnasal packing of the nasopharynx was seldom needed.

Thirty-five patients underwent surgery other than tonsillectomy. The most noticeable effect on the rhinoplasty and otoplasty cases was the rapidity with which postoperative discoloration and swelling receded. The number of cases involved was too small to permit conclusions as to the effect of the bio-flavonoids on the amount of bleeding during the surgical procedure.

The daily ingestion of bio-flavonoid compound for several months following a severe episode was responsible for the sharp decrease in the number of hemorrhages in 47 patients with recurrent epistaxis and 1 with hemoptysis. Two teaspoonsful of syrup a day was adequate dosage for the children and 3 capsules a day for adults. Several mothers volunteered the information that their children had fewer upper respiratory tract infections while taking the medication.

Seventeen patients with acute serous otitis were treated with bio-flavonoid compound in conjunction with routine treatment for nasopharyngeal infection. Althongh 17 cases is probably an inadequate test series from which to draw valid conclusions, it was felt that the condition was resolved more rapidly than usual.

TREATMENT OF RHEUMATOID ARTHRITIS BY A COMBINATION OF CORTISONE AND SALICYLATES

It is becoming increasingly evident that the treatment of rheumatoid arthritis with large amounts of cortisone or ACTH may be in effect the substitution of one evil for another. This belief is based on the prevalence of undesirable side effects, the speed with which symptoms recur when the drugs are withdrawn, and, most important, the fact that cortisone, when used at high blood levels, inhibits the body's own production of ACTH and eventually results in atrophy of both the anterior pituitary and adrenal cortical glands.

Since salicylates were the treatment of choice before the advent of cortisone and ACTH, a number of physicians have been experimenting with a combination of salicylate and smaller amounts of cortisone with good results. A tablet preparation, Salcort, containing 2.5 mg. of cortisone, 0.3 gm. of sodium salicylate, calcium ascorbate and buffers has recently been introduced for clinical use. Aluminum hydroxide gel and calcium carbonate are introduced to relieve occasional gastric distress, and the calcium ascorbate is present to supply the increased requirement for ascorbate when the adrenal cortex is specifically stimulated. It has also been shown that ascorbic acid may diminish the breakdown of corticosteroids, thus tending to prolong their useful action.

Edwin A. Busse, M.D., writing in the November, 1955, issue of *Clinical Medicine,* reports on five cases of acute or chronic rheumatoid arthritis and five cases of calcific bursitis which have responded favorably to this combination with little or no side effects.

It is evident, therefore, that the judicious combination of cortisone and salicylates, together with antacid buffers and added ascorbate, can produce a much more favorable reaction in arthritic patients than by the use of either agent alone. Moreover, the reduced amount of cortisone eliminates the hazardous side effects present in large scale hormone therapy.

POSTURE AND CERVICOBRACHIAL PAIN SYNDROMES

Donald A. Johnson, M.D., presents a revised concept of cervicobrachial pain and paresthesia in a report in *The Journal of the American Medical Association,* December 17, 1955.

Posture, the author maintains, is the common factor in a variety of cervicobrachial syndromes. Postural myoneuralgia describes disease in this category. Its symptoms are pain and/or paresthesia in the cervicobrachial area, and postural stress, not individual peculiarities or particular physical habits, are at the root of the symptoms. Occupational factors are important contributors, as are trauma and unusual physical exertion. It is common in middle-aged women and in young women during or after pregnancy. The person complains of pain, paresthesia or sometimes both, usually of the arm, the anterior chest wall, the shoulder, the interscapular area, the midcervical or cervicodorsal area of the midthoracic or thoracolumbar areas of the spine, or the occipital area of the skull. The discomfort usually increases at night and is usually present in the morning; it may be unilateral or bilateral. Precordial pain may be the principal complaint, or interscapular pain may be present alone. Spontaneous remissions are common. In many of the syndromes, posture is of primary significance.

The important factors in differential diagnosis are a characteristic history, shoulder girdle tilt, all or some part of the characteristic pattern of muscle tenderness to point pressure, and a bruit over the subclavian artery when the arm is abducted. One or more of the elements may be lacking, and none is specific.

As a rule, office instruction in exercises and posture suffices. In severe or protracted cases hospitalization provides the continuous observation and support the patient needs. The first exercise consists of bracing the shoulders back to approximate the medial scapular borders in the midline. The second consists of bracing the shoulders up as though attempting to touch the shoulders to the ears. The third is a pushout exercise, the patient standing 2 feet from and facing into a corner with one hand on each wall at shoulder level. These exercises stretch the pectoral muscle and strengthen the upper trapezius, rhomboids, levator scapulas and serratus muscles. Each exercise should be done five to ten times hourly each day. An erect posture must be assumed between exercises. The improvement is usually pronounced after 2 weeks. If no improvement is noted after 3 weeks, the problem calls for review. Cervical traction may help to relax tight muscles, but it is not remedial. Heat, massage, mild sedation, and analgesics may also be helpful early in treatment.

SURGICAL PLANING OF THE SKIN: COMPLICATIONS AND RE-EVALUATION OF INDICATIONS

In the March, 1956, issue of *California Medicine,* Willard L. Marmelzat, M.D., reports on a series of 100 surgical planing procedures. Among the complications were six cases of pruritic erythematous eczematous dermatitis, three cases of hyperpigmentation, and two instances of milia resulting from a previous first planing. All complications were controlled medically, and in no instance were there permanent sequelae.

Continued experience with plastic planing operations has led the author to formulate the following indications and contraindications:

1. Postacne scarring can be improved only in varying degrees. The best results are obtained when the scars are broad and flat. "Ice-pick" scars can never be completely removed and the patient should be so informed.

2. Linear raised keloids and scars can be improved more easily than linear depressed scars.

3. Decorative tattoos with various colored pigments situated deep in the corium are practically impossible to remove and should not be treated by this method.

4. Likewise, surgical planing is not the treatment of choice for the removal of a portwine vascular nevus, owing to the depth of the corium involved.

5. The healing process following removal of an epidermal nevi by plastic planing is no more satisfactory than if the tumor were removed by surgery, electrocautery, or cryotherapy. This should be brought to the patient's attention.

6. Malignant tumors should be treated by standard methods familiar to all.

In undertaking surgical planing operations, the dermatologist must be aware that the psychiatric and emotional impact of the patient's scarring on the personality may be of greater importance than the marks on the skin. Plastic planing is not going to remove anxiety or give poise. A poorly adjusted person will be just as poorly adjusted after planing as before. Therefore, it is important that patients be selected carefully and that the probable cosmetic outcome be realistically discussed.

LEGGING FOR LOWER EXTREMITY SKIN TRACTION

A simple one-piece legging for lower extremity skin traction is described by Carl E. Anderson, M.D., and R. Dee Robbins, M.D., in the April 14, 1956, issue of the *Journal of the American Medical Association.* The device is constructed of foam rubber and elastic corset material and is fastened with straps and buckles. Available in three sizes, the legging is of simple design and can be applied by unskilled persons with a minimum of instruction and risk. A webbing strip on either side provides an attachment point for a spreader.

The authors have tested the traction legging on 1,000 patients at home and in the hospital for a 5-year period with satisfactory results. In 90 per cent of the cases, the traction was applied by the patient or by untrained hospital aides. Occasionally, the legging is placed too far distally which allows it to slip and create pressure over the malleoli, tendo achilles, or anterior ankle surface. No serious skin, nerve, or vascular complications have arisen from its use, however.

The legging is recommended for use in low-back, pelvic, or lower extremity conditions requiring skin traction.